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FREEDOM AND CONSTRAINT OR POTENTIALITY AND ENVIRONMENT*

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I. Introduction

For four years most of the world has been at war; for two years we have been at war. And the end is not yet. We who live in this war-torn world cannot but be amazed at the new industries arising overnight, the new products created for war and peace, the changes in the lives and habits of millions, the coordination of human effort over wide areas, the effective conduct of great campaigns, and the new hopes and aspirations springing up in a world that only ten years ago was forlorn and bedraggled. The suffering and horror of war are terrible; no one can, for a moment, forget the blood and sweat and tears underlying all this vast accomplishment. Nevertheless, in the face of all this one cannot help wondering what we might accomplish in peacetime by expending equal thought, energy and effort upon human welfare.

Psychologically war is an emergency which by mobilizing the resources of whole populations brings out high purposes, great energy expenditure, widespread fabrication of material, coordination of effort and an integrated and powerful attack upon the enemy. Invention and scientific discovery stimulated by war solve problems that under ordinary conditions would take ten times as long. Constraints are removed, individuals are freed for new functions, and society itself for new organizations. Out of the pattern of unique experience developments may come within both individuals and social groups that would never arise from more

* Presidential address for the Fifty-first Annual Meeting of the American Psychological Association. Because of the request of the Office of Emergency Management that meetings be postponed for the duration of the war, only a skeletonized business meeting of the Association was held at Northwestern University, Evanston, Illinois, on September 2, 1943. Hence this address was not delivered orally.

commonplace events. Our wartime experience suggests that the possibilities of effectively utilizing human and material resources are almost limitless, if only the constraints inherent in our normal environments, which inhibit us from expending money, time, and energy, could be removed.

Great interest in the environment marks the recent years. Perhaps this grows out of the glimpses given us of what modern industry and engineering can do to create a more desirable life; perhaps it grows out of the increased standard of living, so apparent to those who compare their own status with that of their grandparents. In the modification of the environment lie many of our hopes for the future. For the first time in human history, on a wide scale and among many millions of people, there is some conception of the practical techniques for improving the lot of all. Hopes and aspirations for a better world are as old as man. But insight into the practical mechanisms for the conquest of the universe is only a few centuries old and in many respects only a few decades old.

Two questions arise: What is the effect of environmental changes upon group and individual modes of living? What is the effect of these changes upon the level with which individuals function within the new framework of equipment and skills? These are frequently confused. Beyond question all of us have available better resources and equipment than did our grandfathers and can do many things formerly impossible. Whether we are as able within the framework of our environment is quite another matter. Although both of these questions interest the psychologist, one of his primary functions centers about the second since so much of his work is concerned with the analysis, assessment and prediction of the individual's performance within the framework of his particular society.

Each generation not only has the accretions in the form of instruments and institutions developed by previous generations, but its members also begin adjusting to them at an early age and thus build up the skills demanded over a very long period. For children in the 1920's there were toy automobiles with steering mechanisms like those of large cars. Their fathers who had had no such playthings as children, were forced to acquire the complex skill of steering an automobile slowly in the face of interfering habits set by other equipment. In addition, the modern youth who begins to drive has already had much experience in automobiles, has made many incidental observations on driving and has

discussed it with others who are more expert. In this gradual adaptation of the individual to the equipment of the world into which he is born, the level of performance of almost all the persons in the group will be raised. Some may even be convinced that these changes indicate a real change in capacity. But be humble, and remember that given a sheep, a spinning wheel, and a pair of knitting needles, your grandmother turned out a very respectable pair of sox, an accomplishment far beyond most in our society.

The problem is confusing because of the ability of society to simplify processes by making them foolproof and thus bringing them within the reach of all. In test terminology, society does not like high ceilings. Thus, it has so simplified the mechanical and electrical controls of the automobile that where previously only a highly skilled person could drive, now almost any one can. Not only have the driving and braking mechanisms been simplified, but the layout of roads, the elimination of hazards, and the development of signal systems have made it steadily more possible for less able individuals to perform. A psychologist in 1910 asked to give the proportion of people who under any circumstances could drive motor cars would, at the most, have predicted not over 10 per cent. His estimate would have been sound at the time. But he would have been far wrong—partly because of our gradual habituation to the automobile and partly because of the skill of our engineers in making it foolproof. Although the psychologist in 1930 would not have been far off in estimating the proportion of women capable of industrial jobs, because of the research that shows how small sex differences are, he would have underestimated the possibilities of simplifying processes and of breaking operations up into easily learned component parts. Society may make its main advances by developing specialists of high skill who can adapt its machinery to all levels within it.

It is pertinent then to inquire into the nature of the environment and more particularly to our conceptions of it and to examine the methods by which it can be studied. This is a domain too often neglected by the psychologist, who is much more likely to be concerned with the individual.

Life is approached from two points of view. One views the individual from within and asks "What does the person do to his environment?" The person is looked upon as the master of his own fate and the external world becomes the machinery through which he operates. In the studies of the later careers of gifted chil-

dren (6, 18, 19) and of subnormal children (5), a research technique is developed which makes the individual the independent variable and his accomplishments—the psychological environment he constructs—the dependent variable.

The second views the individual as the creature of fate and asks "What does the environment do to the person?" Practically, we continually seek the principles for changing behavior through modifying the environment. How shall we teach reading, control temper tantrums, build effective study habits? In research, modifying a single factor to produce a particular result is the limited case at one end and modifying a total environment the limiting case at the other. In between are all types of changes in the environment. Here change in the person's behavior becomes the dependent variable and the environment or some part of it the independent variable.

The social and political bearings of these points of view are reflected in the discussion of free enterprise vs. a planned society and of the dignity of man vs. the dignity of the state. One looks upon our primary social task as building inner resources and strengths and the other seeks the improvement of external conditions. Neither presents an adequate picture of the organism-environmental relation. But since there is a spatial separation between the organism and what is about him in the external world, however much the two are interrelated, little scientific or practical advance can be made without separating them in thought. We can speak of the self-contained totality as the personality, and the totality of the outer forces as the environment.

II. The Personality

Personality, viewed over a period of time and as a continuity, becomes a system which is composed of many processes, tensions, drives, abilities and mechanisms and which in the process of organization from infancy onward has acquired a certain direction and stability. The person cannot be described without reference to his past, nor can his future be predicted from any momentary manifestation unless the sample of behavior available is known to have predictive value. As a system, the personality undergoes pressures from without, which deform or deflect it. It resists these deformations or changes. Presumably, the more it is developed, the greater is this capacity to resist deformation. When a system meets pressures, it adapts by modifying its own internal relations. Its

peculiar virtue lies in its capacity to function by a series of compensatory adjustments which preserves its integrity and balance. Once organization is started, a system continues on in a particular direction with limited chances of diversion. There is inherent stability within an organization which results from its integration about one or another aspect of its possible universe. Such a directional tendency also gives a system a selective character in relation to the environment.

There are also wide differences among the systems we know as personalities in susceptibility to environmental influences. Some who react very little, and are insensitive, are termed the "feeble-minded." Others who are very sensitive and show high adaptability, we called the "intelligent." Most persons fall between these extremes. This concept of general adaptability includes not only reactability for the moment, but also over a period of time. Variations in the environment then produce more changes in some persons than in others.

For two decades, the students of child psychology have studied the development of the person. Some of the implications for the interpretation of behavior (1) that come out of this research can be briefly summarized to show the general characteristics of the human personality.

1. As a growing organism, the person moves by infinitesimal changes from a single cell to a complex organization of structure and function at an adult level. In this progression new structures and functions are differentiated, the size and form of structures and the level and effectiveness of function change.

2. The person is a spatially separated unit that functions as an organized whole in the situations he meets. This molar character of the person means that we cannot take him apart and reassemble him, but always work with him as a whole. Psychological terms classify acts by similarity, since one and the same act can be called sensing, learning, emotion, or memory.

3. The person lives in a context which is neither simple nor unitary and which continuously affects behavior and development. Patterns of stimulation come out of this context and are part of it. Because the child is himself an object in space that must apply energy at specific points to other objects in space, behavior becomes specific. In this process the stimulus field and the response system become structured and patterned.

4. As the person moves into and through new zones of experience, new skills and activities are developed. In developing a particular skill to meet the demands of time and place, the person purchases competence at the cost of versatility; with the structuring that is inevitable, some of his original multipotentialty is lost. Because time is limited, selection is

necessary. Every pattern of stimulation and every response system competes with every other. The outcome is a personality pattern that represents competence in some areas and none in others; the integration and development of some capacities and the neglect of others.

5. At any moment the person can be described in terms of his organization up to that moment. He consists of skills in various stages of organization, attitudes and beliefs of various types, symbolic processes, motivating devices, and emergency reaction mechanisms. The person is not, however, a closed system.

6. The process of development is not reversible. Because of the interrelations involved, neither the context, the relations between the person and the context nor the relations within the person can be precisely reproduced. Instead of simple and single causes with simple and single effects, there is multiple causation, reciprocal relation, and the progressive cumulation of effects.

7. In the universe of the person, social relations are of primary importance. From birth onward the person exists in a world of values in which he is continually reacted upon by other humans and in which he observes the effects of his own reactions upon them. About him at all times are group expectancies. His personality, with its social stimulus value, is an important element in every situation involving other human beings that he meets.

8. The person retains the memory and the modification of behavior that result from experience. Through his ability to symbolize, he carries the past forward into the future and moves out and away from the present in time and from the immediate in space to the larger universe which makes up his psychological environment.

III. The Environment

What is the environment? For our purposes, which center about the effect of the environment upon the person over a period of time* rather than for the moment, it can be defined in terms of *resources*, *incentives* and *constraints*. Its *resources* are its content; the products of the group up to the appearance of the individual on the scene. Included are all the materials, institutions, facilities, equipment, symbols, means of communication, etc., available to human beings within the culture, channelled to the individual through other humans. Children the world over vary in many ways, such as the language spoken, games played, the books read, and the music heard, because of the content of the culture into which they are born. *Incentives* are the devices society develops to encourage and stimulate individuals to respond to group purposes. They include all the devices that grow out of intercourse between and among individuals, which give the activities of the group positive impulsion, force, and direction as distinct from the

* See Lewin (12) for a discussion of the environment in terms of the moment.

constraints which act negatively. From birth onward the person is surrounded by incentives, many of which are symbolic in form and come to him both indirectly and directly as values through the instruction and encouragement given by society. *Constraints*† are the limitations and restrictions with which the individual is surrounded and which prevent him from realizing his potentialities. Constraints include not only the prohibitions and restrictions that are explicitly verbalized, but also all manner of interferences, deficiencies and inadequacies that arise in group living and which prevent or hinder the full utilization of material and human resources.

Historically, psychologists who have been little concerned with the environment or the *milieu* in its more general aspects have used a variety of terms to describe whatever it is that affects the person. An early term was *stimulus*, used to refer to a particular phenomenon which initiated sensing. More loosely it was used to refer to an *object*, a term used in its own right to describe stimuli tied together into a unit or pattern. The term *relation* was sometimes used for larger patterns of more than one object. Psychology studied reactions to stimuli, objects and relations. Symbols were objects.

In time it became clear that these terms were inadequate. The much over-worked term, *situation*, then came into use to describe a combination of circumstances or pattern initiating a particular response. It was implied that situations could be reproduced. Then *Gestalt* emerged. It characterized both a configuration in a moment of time and an organization extended in time. In actual use it has been either too closely limited to perception or so broadly extended that it includes everything.

More recently the term, *climate*, sometimes used as *social climate*, with a synonym *atmosphere* (13, 14), has come into use, particularly in studies of children. These terms refer not so much to a configuration of stimuli at the moment as to an extended and over-all characteristic of the environment. Its use in psychology parallels that in meteorology. When we speak of a mild climate, we mean that it is typically mild, not that it is always mild or that there are no hot or cold days. We can speak of a schoolroom, a home, a community as having a social climate. In one sense a "climate" is composed of the repetition of similar specific stimuli, in another it is the thread or current of common properties running through a variety of situations. Objects and events that at one time seem of great importance become of little significance as time passes when compared with others that persist in the environment of a particular person.

Our concern is not with the evolution of culture nor with society in the large, but only with the extra-individual surroundings of

† Because it more definitely emphasizes the environmental nature of the restriction and also implies operation over a longer period of time, the term constraint is used in place of Lewin's word *barrier* (11, 12). What is felt as a barrier by the individual at the moment may or may not be a constraint over a period of time.

the person which operate upon him and upon which he operates. Prior to their action, the person consists of potentialities which, under stimulation, will move toward or approach limits set by the nature of the organism. Given equivalent amounts of stimulation, practice and motivation, individuals will tend to distribute themselves in a normal frequency, with most near the average and fewer near the extremes. Beyond a certain point, human beings are markedly resistant to stimulation; a principle established for a wide range of physical and psychoiogical circumstances. Thus, beyond a certain level further inclusion of vitamins produces no noticeable effect. Beyond a certain point further stimulation and practice produces no corresponding modification in the behavior level of the human organism. Coaches and teachers of humans at every level encounter these limits. In spite of the skill and effort with which they set up good environments, one child in a few weeks, in an intellectual, artistic, manual, musical, or athletic skill, will do what another with years of the finest instruction and much practice can not do. To deny the existence of limits is virtually to say that assessment, prediction, and guidance are impossible and to substitute for generations of careful scientific work, a completely environmentalist philosophy that has no basis in fact.

That the research worker's conception of the environment affects the character of the research done and, more particularly, what is studied, is shown by the many investigations which report the effect of single factors upon children's adjustment. Mainly, these assume simple one-factor environments and show low positive correlations between the factors observed and good adjustment. Even casual surveys of homes or schoolrooms reveal both good and poor practices within the same context. Studies of problem children trace maladjustments to a wide variety of single factors. Although the existence of some association between each of these and children's difficulties is beyond doubt, the exceptions are many. And in many instances children who make very good adjustments come from environments which superficially seem to be very bad and vice versa. We can not as yet describe an environment such as a home in its totality. If we could arrive at some practical description that would permit classification and separation, different environments could be set up by selection or design and their effects on the behavior of children studied. Although the material and mechanical features of an environment can be described now with some effectiveness, describing its psychological or social features presents great difficulty.

There is also a strong tendency, well illustrated by studies of socio-economic status, to oversimplify the factors involved. On the basis of income and occupation, people can easily be divided into fairly distinctive classes, which show consistent association with various factors, such as intelligence, child care, and community participation. Because of the absence of other ways of classifying home environments in simple terms, there is a striking over-emphasis of the effect of income and socio-economic status upon mental processes and adjustment. Some studies even conclude that differences in such status produce all the variance in intelligence, a conclusion hardly justified by a literature which can equally well be interpreted in terms of the variation in intelligence producing the variation in socio-economic status. The standard of living may be a symptom or symbol of adjustment rather than a primary determiner. At every income or socio-economic level, striking examples of maladjustment in children and adults are found. Likewise at every level many children and adults make very good adjustments. The need of disentangling this picture is all the more important because so many reformers, often the very persons who discount individual success in terms of economic and material goods, hold that the best and perhaps the only solution for human ills is raising the income level. Davidson's study (8) which shows little or no variation in measurable personality traits other than intelligence, suggests that our highly industralized society may select individuals rigorously in terms of intelligence and not select in terms of other personality traits.

To study the environment and bring it under our control, it is necessary for us to view it as a manifold and then ask how it is put together. As long as environment is envisaged as a single continuum going from bad to good or is divided sharply into two disjunctives, little progress will be made in analysis of its effects. When an environment is viewed as a milieu or manifold, it can be represented by a system of coordinates of many dimensions. Symonds (17) proposes a two-dimensional system in which the x ordinate is designated acceptance-rejection and the y ordinate dominance-submission, with the origin indicating the ideal. Although his study shows that there is some significance for each of these in determining adjustment, both dimensions are not studied on the same cases. We may well question, as did he, whether two dimensions are enough.

Observation and study of the management of young children reveal not a single continuum, but a number of dimensions. First is one which may be called *quality*, at one extreme of which are the direct methods of force and compulsion and at the other, the indirect methods of persuasion and leadership. The second relates to the *intensity* with which the methods are applied. Some homes are mild and gentle, while others are vigorous. The third

is the *consistency* with which control is exercised in similar situations. Watson once suggested that if all undesirable objects were invariably associated with pain, the child would build up correct habits quickly without emotion and with no need for teaching. Children are punished today for an act that was praised yesterday. When asked to characterize their teachers, children, in surprising proportions, comment on their "fairness or unfairness" and refer not only to inconsistency in the treatment of the same child, but also from one child to another. The clinical literature contains instances of neurotic-like behavior, to say nothing of milder maladjustments, produced by lack of consistency.

A fourth dimension relates to the *pervasiveness* or the range of control over a variety of different situations. Do controls cover all, a large part, or a small part of the child's activities? Are there areas of strict control and areas of freedom into which he may move? This dimension differs from the quality of control with which it is often confused. A very loving mother may dominate a child as completely as does a mother who controls through force. A progressive teacher who sweeps children off their feet by her enthusiasm may exercise as many constraints as a more conservative teacher who rules by other methods. The pervasive mother or teacher with good techniques in other respects, may produce strong feelings of inadequacy in children who do not conform.

Assuming each dimension is divided into two classes, the following sixteen characterizations of an environment in terms of discipline or management can be developed.

1.	Direct,	intense,	consistent,	pervasive
2.	Direct,	intense,	consistent,	not pervasive
3.	Direct,	intense,	inconsistent,	pervasive
4.	Direct,	intense,	inconsistent,	not pervasive
5.	Direct,	mild,	consistent,	pervasive
6.	Direct,	mild,	consistent,	not pervasive
7.	Direct,	mild,	inconsistent,	pervasive
8.	Direct,	mild,	inconsistent,	not pervasive
9.	Indirect,	intense,	consistent,	pervasive
10.	Indirect,	intense,	consistent,	not pervasive
11.	Indirect,	intense,	inconsistent,	pervasive
12.	Indirect,	intense,	inconsistent,	not pervasive
13.	Indirect,	mild,	consistent,	pervasive
14.	Indirect,	mild,	consistent,	not pervasive
15.	Indirect,	mild,	inconsistent,	pervasive
16.	Indirect,	mild,	inconsistent,	not pervasive

For purposes of illustration, some of these can be characterized. The first would use direct disciplinary methods of an intense type consistently

applied and covering virtually every situation faced by the child. The eleventh would use indirect methods, i.e. persuasive and leadership methods, which are intensely but inconsistently applied but which pervade all types of situations.

The four-variable characterizations give 16 descriptions: if the midpoints are added there are 81. A five-variable characterization would give 32 descriptions, with 243 if the midpoints were also used. But each variable can be divided into seven or more classes. And not all are linear; quality, consistency, and intensity, are probably linear, while pervasiveness is almost certainly curvilinear. Obviously these dimensions, especially consistency and pervasiveness, overlap. But we do not know the amount of overlap, nor whether high intensity accompanies direct methods and mildness indirect methods, nor how consistency is related to either.

We have talked about discipline as an aspect of the home environment. But what of the school, the child's associates and the community, each of which exercises some control? To what degree do these overlap? What is the relation between uniform types of control common to all of these environments and widely differing methods of control in each? What is the relation of methods of management and control to age? What we now know about child management is largely a mixture of common sense and of implications drawn from very limited experiments. As psychologists, we are still baffled when asked pertinent practical questions. And the questions are often of great importance—upon the answer of a single expert may depend the policy of a school system with its many thousands of children.

If we were to add to this multidimensional picture of one of the important environmental complexes, an additional series relating to affection for children, i.e. acceptance-rejection, another relating to the responsibility given the child, another relating to family goals and ideals, and then were to add in the more often studied variables which relate to material possessions, income level, social status, mid-parent education, etc., we would have a very complicated manifold indeed. How many of these complexes and variables are necessary to picture the environment of the child, how much do they overlap, how many are unique, which can be determined with reasonable accuracy knowing some; these are questions that cannot be answered in the present state of our knowledge.

For the present we must assume that the various factors operate equally. With good measurement and scaling we could move on from this assumption to the determination of their weight and interrelationships and then perhaps by the use of factor analysis or

similar techniques find clusters or other statistical integrations which would aid us to sort out the significant from the insignificant features of the environment. By viewing cities as constellations and applying the psychological and statistical techniques used heretofore for studying the individual, Thorndike (**20, 21**) has made significant contributions to methodology and understanding. He finds that a number of variables go together to make a good city and describes their interrelations. This is a beginning attack which shows how a large area or block of the environment can be viewed as a system. The existence of a multidimensional environment should not lead us to think loosely about the environment nor make us unwilling to accept the results of research. Rather it should challenge us to explore the environment both in detail and in total effect.

By deliberately setting up particular atmospheres or social climates and then exposing children to them, Lewin (**13**) has given us a fruitful technique for studying the environment. Lippitt (**14**) found differences in the behavior of children exposed to democratic, authoritarian and *laissez faire* atmospheres. While the extent to which we can generalize from these limited situations to other situations and particularly to the adult situations denoted by the adjectives used to describe the atmospheres can be questioned, the experiments do turn attention from single and specific stimuli to the pattern or whole environment and show that it is possible to develop methods and controls for studying the impact of a much larger environment than those with which we have hitherto concerned ourselves. A substantial literature on the development of social behavior in young children now exists which has many implications for studies on older children and adults (**4, 15**). It should be possible to find environments in which the operation of known complexes of stimulation can be studied over a period of time. From the studies on discipline in children, it is clear that measures of outcomes must be extended in time and must cover behavior other than that in the immediate situation in which the stimulation is presented. What we now need are opportunities to select or control environments which vary widely in their constitution and to make observations on wide ranges of behavior over a long period.

IV. The Constraints of the Environment

In addition to its resources, the environment contains incentives and constraints both of which are essential features of group

living. Because of our limited time it is impossible to discuss the positive features of the environment which are grouped under incentives. The concept of constraint is more important for our immediate purpose.

An environment is more constraining than another when it cuts off the full range of behavior. A constraint may be physical as with confinement; social, as with a taboo; artificial, as with a laboratory limitation. It may be temporary or long-lasting.* In one of its uses constraint is a statistical term, the opposite of which is degrees of freedom. If we constrain, we limit variation. By our experimental design we permit or limit variation. Our use of the term is similar but with wider extension. In research there is a continuum, at one end of which is the laboratory experiment with variation permitted in only one factor, beside the one in which the effects are observed. Intermediate are set-ups in which a number of factors vary and a number are controlled and at the opposite end are the so-called "natural" situations, where no restrictions are imposed as in the modern studies of social behavior in free play situations.

Psychological interest is expanding from very limited ranges of stimulation to contexts which are much nearer life situations. The psychology of the future will use much larger contexts. Already social climates for schoolrooms and for play groups have been set up experimentally. We are also learning that free play, spontaneous conversation, the uncontrolled interview, and spontaneous play in a somewhat controlled situation give psychological data of value. While we are not yet highly skilled in the use of these techniques and are still working at their quantification, measurement and systematization, they are attempts to use types of stimulation and of reaction previously inaccessible to the psy-

* Not all disturbances, barriers, or restrictions are constraints in the sense of the term as here used. In an acute illness, for instance, a person may be near death with no apparent chance of recovery and yet within a few weeks be as vigorous and strong as ever. A chronic illness extended in time is much more of a constraint. An experience, highly charged with emotion, may function as a constraint if it changes the behavior of others and thus becomes extended in time. If, however, recovery is quick without after-effects, there is no constraint. This is a problem of the interaction of the environment and the person which deserves much investigation. In general, a child deprived of stimulation for a time, upon its return, moves ahead with great speed and soon cannot be distinguished from those who have had continuous stimulation. It is likely that the younger the child, the more quickly such recovery occurs. How long must a deficiency last, and at what age must it appear, to act as a constraint?

chologist, perhaps through constraints arising within our own field.

Methodologically, our problem is one of recognizing, describing and measuring the constraints inherent within any system of stimulation and then systematically changing them to determine their effects upon behavior. Practically, our problem is the removal of constraints which interfere with development and growth. Note that in the sense in which constraint is here used, it is not synonymous with discipline. Some environments that seem free to the casual observer may actually be the most constraining. Some discipline in the popular sense may not even be constraining in the psychological sense, since it may further development. Too much freedom may result either in a failure of organization or adaptation at a simple biological level. A more specific constraint is the absence of the materials, equipment and instruction essential to the organizing of a skill—dearth of opportunities for music for a child of high capability, absence of instruction in reading in a remote district. Other terms such as lack of, failure of, need for, might be used. But the term constraint is better since it implies a cutting down potentiality by a factor or relation within the environment.

An organism could be described in terms of the limits imposed by nature and the constraints imposed by the environment. Because man is limited to arms and legs, i.e. has no wings, he cannot fly on his own; prior to the last half-century he was constrained from flying by a cultural lack, i.e. the airplane had not been invented. A child may have limited musical capacity in a free musical environment or may have great musical capacity in a constrained musical environment.

What I plead for is a thorough-going analysis of the environment in terms of its degrees of freedom and its constraints, in order that we may remove or reduce to a minimum the constraints that prevent individual development. Such an analysis should recognize the new relations which appear with the individual between the individual and his environment and within the environment with the passage of time. Involved also is a criticism of the conception, all too prevalent, that by merely putting a constant amount of something or other into the environment of every individual, the human race is thereby changed and a new world created overnight. Since we are always engaged in the creation of a new world and are ourselves reacting to a manifold, we should go about it

with some knowledge of the differential effects of the environment upon the differences intrinsic to the human.

The constraints developed by society are many. Among them are:

1. The social restrictions which go under the general heading of discipline and management control and extend from complete physical restraint to a wide variety of subtle psychological and social restrictions, many of which are embodied formally in law or informally in tradition.
2. The ceilings put by the level of development of the social group itself. These operate to restrict and limit the possibility of development just as low "ceilings" restrict variation in mental test score.
3. The failures to use available natural and human resources, because of ignorance, conflict, and poor social organization.
4. The restrictions of status, caste and class which carry over from one generation to another, and which restrict mobility within the group. If society is to use its human resources to the full, a high degree of mobility within the population is necessary in order that individuals may rise or fall within their own generation in accordance with their effectiveness and independently of social status.
5. The restrictions that grow out of bias, prejudice, hate, and unreasonable attitudes highly charged with emotion.

This discussion assumes that the individuals who make up the human race differ from one another with respect to the capacities which they bring with them, and the speed with which they can organize their capacities. It assumes, also, much variability within the environment with regard to *resources*, *incentives*, and *constraints*. The effect of variance in environments, when added to variance of individuals, is to increase the differences between, rather than to make more similar, the members of a population. When we speak of the *dignity of the human being*, we mean essentially the recognition of individual differences, an environment which permits individual capacity and potentiality to manifest itself, and a social organization that does not exploit some at the expense of others, but facilitates and furthers good group living for all.

V. Interaction between the Organism and the Environment

From the earliest moment of observations, organisms differ in measurable ways. Variability is a fundamental fact of nature. Darwin, who clearly recognized this principle and who is regarded as the great student of heredity, was also one of the outstanding students of the environment (7). He spent his life searching for different environments in order to measure their effects upon vari-

ous species of plant and animal life. Two fundamental processes recognized by him are: first, variation or individual differences within a species; second, variation in the environment, which, superimposed upon these individual differences, sets up a selective process through which the species over a period of time goes in one direction rather than in another. Darwin also made a clear distinction between the factors that produce and those that preserve or increase variation.

By and large the principle that the environment increases variability seems well established, particularly if we consider the whole broad range of environments rather than think in terms of a relatively homogeneous culture. Most of our experiments deal with a very narrow range of environments. The question whether experience from, say the fourth to the eighth grade, increases variability represents only a minor shift in the environment when compared with the possibilities of the range from no formal education to post-graduate education. The environments in which human beings live vary tremendously., both among individuals and within the life-time of a single individual. One person has seen half of the known world, while another has lived within five miles of his birth place for his entire life. One individual has had much stress and strain, another has had little. One has had much instruction, another little.

What happens when an organism with intrinsic limits moves into an environment of constraints? We are interested not so much in immediate effects upon behavior as with the outcomes of blocking off developmental possibilities over a period of time. If we think of the infant's personality system as multipotential, and see that it may develop in any one of a dozen, or a hundred different directions, the first constraint is one of time. In heaven there is infinite time to permit the complete realization of potentialities. But on earth, the human being can carry on only one major activity at a time and has only a limited time in which to function. The child can acquire only a few skills; he cannot practice the piano while he is playing baseball nor study mathematics while reading novels. The enforced selection may be deliberate but usually is not, as it is intrinsic to the situation. Since later outcomes result from the early selection, the system becomes fashioned. Thus, the constraint of time circumscribes every individual by restricting some possibilities. In the complex system of freedom and constraint, potentiality and limit, the person as a system seeks a psy-

chological homeostasis, which presumably is one of some comfort with reduction of stress and strain. But because the environment is changing and the organism is changing, the balance is never complete. And because the person is a living organism expending energy at a high rate, the balance is not one of minimal effort, but one that is probably nearer maximal effort.

Two general attributes of the environment are important in furthering this process of fashioning. One of these may be called *breadth*. Because the abilities of the human being are essentially uncorrelated, i.e. the low relation between musical ability and intelligence, artistic ability and athletic ability, etc., the human cannot discover his potentialities without some exploration of his environment and of himself. Lehman and Witty (10) found the widest range of activities in children at nine years, with a progressively narrower range each year up to twenty-two. If these results are typical, the breadth of activity at twenty-two is a function of that at nine years, i.e. the selection takes place within the framework of activities available to the child. In a favorable or rich environment children try out more different activities and find those which interest them and for which they have capacity. Thus, interest and skill come ultimately to be related. An aviation instructor reporting differences between English and American boys stated that English boys as a rule had had much less prior mechanical experience with cars, motorcycles, or motor boats, while American boys in the main, have already tried themselves out in many such mechanical situations. Hence, American boys who are awkward or ill-adapted have turned early to other activities and seldom attempt to fly, whereas English boys of corresponding levels do try and have to be eliminated. In the final outcome the performance of both groups is extraordinary, but with one group there has been more early informal selection, with the other more later formal selection.

When rich opportunities are available the individual not only gets some opportunity for the practice and organization of skills, but also makes a personal evaluation of his own assets and liabilities, which is particularly important for adjustment. Since he is also unaware of the resources of the environment, he evaluates the environment. Much of his growing period is devoted to this exploration. In a rich and varied environment the person is much more likely to discover what he can and what he cannot do. The search is a combination of selection and training with some possi-

bility of new direction and ideally involves freedom to drop activities as well as to try new ones. In one sense, this long search is an almost blind trial and error process; in another sense, however, it has logic, direction and inevitability because each choice determines the next opportunity and thus gives some direction and organization to the whole.

It is probable that breadth of environment will further the development of a variety rather than a limited number of forms of behavior and over a period of time produce more flexibility in behavior. It will probably also aid the individual in the discovery of his own possibilities; make more likely the congruence of interest and skill, result in more satisfying modes of life, and make possible a greater contribution to the group. But these questions should be studied with some care as they are basic to the establishment of any practical program of training and education. Particularly, should a rich environment be defined more carefully since an environment may seem to be rich physically when it is actually not so psychologically. Presumably a good curriculum in the early years is broad and permits much exploration, while one in the later years is concerned with *depth* of experience; another attribute of the environment that merits consideration not only in itself, but also in terms of the balance between breadth and depth.

Recent work on the relation between diet and activity throws light on the problem of *depth*.

> Children on a low dietary intake compensate by decreasing their activities and do not show the deficiency diseases that might be anticipated or at least delay their onset. If food is increased, the activity level is increased; if the activity level is raised by outside stimulation, the need for food is increased with more food-seeking behavior. If little food is available and the organism expends energy at a high rate, deficiency diseases appear. Thus, there is a relation both between energy expenditure and deficiency and between nutritive intake and deficiency. If either is stepped up without the other, marked inadequacies appear; if both are stepped up together functioning is at a high level, and if both are reduced together functioning is at a low level. As a result, radical departures in the treatment of children with dietary deficiencies have been introduced which consist not only in providing a high nutritive intake, but also a high energy expenditure, with the result that recuperative processes are speeded up and a stronger physical organism results. Active exercise is now used as a remedial device in many types of cases formerly kept inactive, and is based on the sound principle that the human organism is primarily an energy-expending mechanism. While a state of balance or health can be achieved at any level, good functioning is clearly more than the absence of defect; it implies both energy and stamina—a lesson that is also appearing out of our war experience.

Not quite so much is known about exposure on the mental side. What we do know indicates that a powerful interest integrates the personality, preserves its integrity in the face of stress, and sends it on to high levels of accomplishment. Unless one gets beyond the surfaces of experience into the deeper layers of living, both the individual and his products suffer. We are not so much concerned with the educational implications of this principle, which are many, as with the desirability of analyzing environments in terms of the depth of opportunity permitted. If opportunities for deep concern are not available and no encouragement for strenuous effort is given, the skill and capacity needed by the individual and the group will not appear. Environments can be easy and soft or hard and strenuous. The human being deteriorates in too easy an environment because he is an active living thing that must expend energy. If no desirable outlets that fully engage him are available, undesirable outlets appear.

There is another area of interaction between the individual and the environment that is of very great importance. Shall the environment be *homogeneous* or *heterogeneous* in attitudinal content, or how much of one and how much of the other should it contain? The totalitarian states attempted to create a compact social climate by cutting off access to outside stimulation; by controlling internal agencies of stimulation such as the radio, the press and the motion picture, by breaking down the diverse attitudes built up in the home through organizing the leisure-time activities of children and removing them from home influence for definite periods; and by controlling school content. Only within the last three decades have the mechanical and electrical devices been available which enable a central agency, such as a dictator, simultaneously to reach a very large population from a single source and to reiterate again and again such stimulation. In our democratic society a very different social climate is sought in that we permit the individual access to a wide variety of attitudes and make a virtue of the positive, independent, and self-maintaining citizen who can find his way about. We assume that in an atmosphere of some diversity, internal strength appears.

In rearing children a major problem is that of securing enough homogeneity to give the child stability and orientation, and at the same time heterogeneity enough that he may break free from dependence upon adults and create an independent life pattern. Although our studies indicate the importance of this problem no

adequate core of knowledge upon which to base a program of practice is as yet available.

There are also social implications. If we produce too compact a culture by great emphasis upon stability and homogeneity, a relatively sterile culture that remains stationary and which develops many types of restrictions and limitations within itself may appear. A complex climate will increase the likelihood of thorough exploration of and the location of varying capacities and skills which, in time, will contribute to the effectiveness of the whole. Too much emphasis placed upon heterogeneity and diversity may result in a very complex culture which is not likely to hold together because of a lack of the ties that make coherence possible. In both extremes potentiality suffers by virture of constraints, in the one case, by excessive restriction; in the other, by disintegration of the framework of group living.

VI. Implications for Measurement

If the principles developed in the preceding sections hold, they should affect the accuracy with which we can measure human potentiality. Since potentiality cannot develop without stimulation, the measurement of potentiality involves some measurement of the amount of stimulation or some assumption as to its amount. Since an environment provides more uniform opportunities and fewer constraints in some areas than in others, the quality and accuracy of measurement should vary. Moreover, in an environment of high uniformity the measured differences between individuals will be determined to a much greater degree by capacity, while in an environment without uniformity these differences will be masked by experience. If all boys were to throw baseballs under conditions of high motivation for fifteen minutes a day for two years, each would develop some skill and every boy with potentially high skill would be sorted out. But in our environment, some boys throw baseballs thousands and millions of times for many years, while others throw only a few days each year and some never throw. Under these conditions measurement and estimation of capacity for throwing cannot be made without information as to the amount of practice. Environmental constraints may limit the usefulness of measures without modifying the limits of the individual.

Equalized environments of very high uniformity and constancy are achieved in our society when individuals are stimulated to tremendous amounts of practice. Thus, the environments of the professional, whether

he be golfer, pianist, surgeon, dancer, psychologist, etc., have a much greater constancy in the psychological sense than the environments of novices, since professional activity involves access to common sources of stimulation in a high degree. In many athletic situations, the most constant environments our society achieves are found. Involved are rigid standards and rules, precise layout of materials, clothing and equipment, rigid limitations within which the action must take place, and officials who enforce rules strictly. Although athletes have come by up different routes, the tremendous amounts of practice they have had equalizes their environments. Individual differences under these conditions do not disappear, if anything they are more marked.

An examination of our measures in various realms of activity is in order.

Intelligence. The modern literature shows that measurements of intelligence can be made with high consistency with results of value for many practical and scientific purposes. May we not then expect that almost every situation presented to the human taps intelligence in some degree and that because of the many opportunities for *its* exercise its measurement is made possible. The school systematically presents the child with problem-solving situations in many areas. In play, with all its different games, the child is exposed to problem-solving situations of many types. If this is true, measures of intelligence should show high consistency, because individuals are sorted out early with respect to intellectual capacities and receive much practice in their use. Moreover, if adjustment in the business and social worlds depends upon such practice, measures of intelligence and success in those worlds should be correlated.

If the components of intelligence tests are analyzed in terms of the amount of stimulation the environment affords for each, those tests which consistently stand up as the best measures would be those for which the environment provides much stimulation and practice. Almost all intelligence tests contain vocabulary tests, either as direct responses to words as in the Stanford Binet, or as variations of opposite tests as in many group tests. A striking characteristic of language is the enormous amount of practice received. A number of investigators have counted the number of words uttered per day by children between two and five years of age with results that range from 4,000 to 15,000 words (2). If we accept 10,000 words as a mid-figure, then 10,000 x 365 equals 3,650,000 per year or over 10,000,000 for three years—an amount of practice that no investigation in learning ever begins to approximate. Even if the results were one-fourth of what is reported, the

cumulation would be tremendous. A second striking characteristic of language is its high ceiling, which is well beyond the attainment of any single individual. In English there are at least a million words that might be acquired, yet adult vocabularies range from ten thousand upward with one-hundred thousand, or a vocabulary of ten per cent of the possible words near top attainment.

If now we think of the vocabulary to which one is exposed as consistently far above that which is used, it becomes clear that the language environment, despite measured differences between families, is reasonably constant for the child because of the relation between what he can attain and what is available. Although one child may develop in a home in which the combined vocabulary is ten-thousand words, while another grows up in a home in which it is one-hundred thousand words, the difference between these two homes will not become significant until late in the child's development when he will be receiving much language stimulation from other sources. By five years the average vocabulary is two thousand words (16), very far below that of even a very poor home. This does not deny the existence of variations in language with socio-economic status, but it does emphasize the fact that because the ceiling for language is so high in our culture, all children are exposed to a language content far above their capability. Constancy of environment is related both to the amount of practice and to the ceiling. Hence, a vocabulary test becomes a good measure because it is based on the human being's most practiced function, and on a function with a very high ceiling. In a society with a total vocabulary of a thousand words, vocabulary would be a poor test of intelligence after the age of say three years, because the ceiling set by the culture would be far below the potentiality of the average child.

A second component in many intelligence tests consists of arithmetic problems. In our culture the child meets a wide variety of situations in which counting and the manipulation of simple mathematical symbols is involved. If the symbolism were complicated, the child's responses would be dependent upon knowledge of the notation.

The solution of chess problems might be a good measure of intelligence. But play at chess is distributed haphazardly. Children without exposure to the chess notation would be seriously handicapped. If a hundred children by three months' practice were carried beyond the symbolic framework into the real problems of the game and a test were given, a reliable and valid measure of intelligence might be obtained.

Test content may vary widely in difficulty if its symbolic framework is simple and universal. But if the symbolic system is complex and accessible only to a small proportion of those tested, irrespective of the content level, its measurement value will be small. Psychologists have shown great ingenuity in adapting complex problem-solving situations to simple and universal symbols.

That the environment is more uniform in some aspects than in others is shown by comparing verbal and arithmetical ability. All children must use words if they would affect the behavior of others and participate in social life. The demands for the use of numbers are not so widespread within our culture. In some homes children count and play number games; in others both encouragement and facilities are lacking. The school equalizes opportunities somewhat by including arithmetic in the curriculum. But many children have little except formal stimulation with mathematical symbols. Individuals can be expected to come nearer their potentialities in verbal than in mathematical symbols. In many intelligence tests the verbal component receives the heaviest weighting, the mathematical component the next heaviest, followed by other components. A very good intelligence test can be constructed out of verbal and arithmetical components alone.

Motor skills. Except for the early period of very rapid growth, there is an absence of or very low correlation between different motor skills, between motor and intellectual skills, and between motor and other skills. As a result scales for general motor, mechanical or athletic ability do not as yet approach intelligence scales in prediction or usefulness. Motor proficiency is affected markedly by specific practice and a person with even a little experience exceeds one with none. While every child builds up the elementary skills of walking and of hand manipulation, after their acquisition the motor content of the environment varies enormously from child to child. Some boys learn to play baseball, some do not. Some learn to swim and some do not. Some learn to manipulate a saw, hammer, and plane, while others do not. It is quite different with the symbolic skills; every child must improve in talking and problem-solving to participate in the life of his fellows. Hence, measures of general motor ability should be less consistent, reliable and predictive than are measures of general intellectual capacity. On the other hand, measures of performance level and skill in specific motor responses which have been much practiced can be made with high accuracy and consistency.

It is known that mechanical tests given to men and boys discriminate more effectively in terms of potentiality than do those given girls. And girls in normal times freely admit a lack of interest and inferiority. But in the war program, many girls have been found to have substantial mechanical ability and have shown ability to acquire mechanical skills with ease, once they got beyond their initial feelings of inadequacy. For the girl then good measurement of mechanical ability is dependent upon prior exposure to mechanical opportunities. And the lack of such exposure is a real constraint in the discovery and development of such ability among girls.

Emotion. An area in which it is difficult to develop consistent and valid measures for differentiating between individuals is that of the emotions. For the moment we can assume that the capacity for manifesting emotion is relatively stable and that with suitable measuring instruments its level could be determined. Certainly in popular language we make such distinctions of level between persons and are understood by others. Why are we so slow in developing basic measures for emotionality?

If we think of the nature of the environment, the reason will become clear. The appearance of fear in a particular individual is determined very largely by accident. If any group of young children is surveyed, some will be found who have never had unfortunate experiences with dogs; some who have never had any intimate contact with a dog, and some who have only pleasant contacts. Dogs also vary widely in their reactions to young children. If one-hundred, three-year-old children were available, all of whom had had similar exposure to dogs, it is quite likely that with some experimentation with various types of stimulation a stable measure of susceptibility could be obtained. If a number of additional fear-producing situations built upon a basis of fairly uniform past experience in the children were available, a still better measure would be obtained. But life does not subject us to uniform types of emotional experiences nor does it put pressure upon us to develop a common emotional language. We become emotional in contexts of varying degrees of potency, and on rare rather than frequent occasions. In the very nature of the case, it would seem to be very difficult to develop measuring instruments comparable to those in areas of more uniform stimulation.

Social skills. A persistent problem in the field of the prediction of behavior lies in the area of social adjustment where measures would be of great practical value. For some years we have been distinguishing between social and abstract intelligence without

much success in measuring the former. At first glance the environment appears to provide much more opportunity for practice in social than in other skills. The number of contacts with other persons, even in early years, run into the thousands. But critical examination of the social environment shows a lack of the uniformity language or mathematical stimulation possesses by virtue of its symbolic system. Moreover, there are very wide variations in family and group social patterns with many indirect pressures and variable direct instruction determining content. After six years a common school curriculum in the intellectual field gives all children similar intellectual experiences. We do not, however, expose children to a common social curriculum, nor do we see to it that the various types of social experience are had in a definite order.

Social experience also depends to a marked degree upon the context of the group with which the child is associated. Intellectual experience is more detached from its context and the problems put are tangible and concrete and lead to more specific answers. In many social situations any one of a half-dozen different responses may be right or wrong. Moreover, social learning depends upon others who are themselves variable, while in the intellectual field much of the learning is concerned with material that is very stable. If this view is correct, we may never have very good measures of social potentiality. If we could expose a group of children to uniform social experience, it might be possible to determine whether or not valid measures of sociality could be obtained.

Special skills. In the more special skills there are some areas such as music, in which all children in modern society are exposed to some type of stimulation, and others such as the graphic arts, in which relatively few are exposed. The widespread distribution of the radio, phonograph, and of musical instruments bring music in some form or other into the home of almost every child. Moreover, educators have been interested in the development of opportunities over a very wide area. Through courses, choruses, glee clubs, orchestras and bands, through local and statewide contests, and through the encouragement of listening and participation, virtually every child receives some stimulation and some opportunity. It is likely that the potentialities of children within a population are more effectively sorted out within this area than in many others. The chances of a child of unusual musical capacity being unnoticed is remote when compared with the chances that capacity for graphic or dramatic arts will go unnoticed. Because

musical skill possesses a high degree of tangibility and objectivity, it also has been possible to develop useful scales for measuring capacity and progress.

It seems clear then that any test whatsoever measures both the potentiality of the individual and the environmental opportunities which he has had. Since environmental exposure varies from one area to another and within a particular area from one aspect to another, the individual is engaged in exploring his potentialities. The environment gives him the opportunity for such exploration only if it provides fair amounts of stimulation, but does not do so if stimulation is absent. Without some stimulation tests of potentiality become highly fallible; as stimulation is increased they become better measures. If it is assumed that both time and practice are essential for the organization of skills, it becomes clear that in the absence of opportunities for experience and in the presence of constraints, neither potentiality nor the probable limits of the individual can be determined. The fallibility of a measure would seem to vary inversely with the amount of exposure. Intelligence measures which are highly fallible in infancy, in time acquire a high degree of predictive value (3) because the in-service exercise of intelligence provided by our type of environment exposes and sorts out individuals with respect to this capacity. In other areas in which exposure differs more widely, general measuring instruments as valid or as reliable as our intelligence measures have not been developed. In the past little attention has been given the environmental background which makes measurement possible. If we had greater skill in evaluating environments a clearer understanding of the possibilities and limitations of our measuring instruments might emerge.

The concept resulting from this analysis is one of environmental stimulation which varies widely in the frequency of exposure, the number of facilities available, the ceilings and constraints presented, and the amount of organization resulting. If the variance in environmental stimulation is small, because it is universal, uniform, frequent, and of high level, a good measurement of variance in potentiality can be made. If the variance in environment is great, because it is neither universal nor frequent and varies haphazardly in quantity and level for individuals, the possibility of measuring the variance in potentiality is reduced and often made impossible.

Substantial exposure to a stimulating environment is then a

prerequisite for the development of the individual and the effective measurement of his capacity.

VII. Conclusion

In this discussion I have turned from the development of the individual, a field in which we have made great progress in the last two decades, to a discussion of the environment. By and large psychologists are not environmentalists in the extreme sense; their profession with its historical tradition centers attention upon the person rather than upon the framework in which he evolves. As one works with children two principles become impressive: first, the essential toughness of human protoplasm from birth onward as shown in its great capacity for resisting stimulation that is not appropriate to nor harmonious with the system of personality being developed and, second, the great modifiability and increased level of behavior of children and adults over a long period of time in an environment that is stimulating in its quality and sound in its totality, even though many elements depart far from the ideal.

A direct attempt has been made in this paper to picture the complexity of the environment in which the human organism develops. Implicit is the view that the organism is multipotential and that the environment is multiform. When the person is regarded as a system and the environment as a manifold, the structure and interaction of both are opened to scientific investigation. In neither instance do we deal with an either-or relation, but with a very complex interaction of wholes and parts. The human being is a complex aggregate of many different structures and functions, with changing interrelations within those structures and functions as development and adjustment proceed and as the intrinsic growth processes approach their limits. He lives in an environment that is composed of many different types of stimulation, many and varied demands, many stimulating and motivating circumstances, and many constraints and restrictions. His own developmental task is the organization of a behavioral system on a broad enough base and deeply enough integrated to enable him to meet the rigors of adult life, to make some contribution to human kind, and achieve some satisfaction out of the life process.

But groups of human beings, especially very large ones, have almost unlimited human and material resources, if they can only achieve a form of organization in which the constraints upon in-

dividual potentiality are removed and full development made possible by a stimulating atmosphere and high ceiling. Individual capacity, whether it be motor, linguistic, artistic, intellectual, social or any combination, is the most valuable resource of the group. Long ago William James (9) pointed out that the differences in humans, even though small, are very important for society, since they are the sources of social change. The primary function of the psychologist is the assessment of this resource, the study of its limitations and potentialities, the analysis of its learning and the derivation of the principles by and through which its behavior can be modified. But he cannot understand human resources without knowing much about the environment in which human resources develop. Even the study of the simplest response involves at some point an analysis of the environmental pattern that initiates it, or the context in which it appears and changes. It is not then an accident that we have the problems of freedom and constraint and of potentiality and environment—it is the function of the psychologist to furnish the scientific substratum upon which the policies of the education, training and utilization of our human resources are based. Over-estimation and under-estimation alike will cause society to lose faith in us.

A conception of the full utilization of human and material resources for the benefit of man is just breaking in upon us. Everyone expresses it somewhat vaguely and no one quite foresees all the possibilities. Science and invention have given us the modern world through the use and development of material resources, they have not yet given equivalent use and full development of human resources. The psychologist has a significant scientific and practical role; he knows more about man as a person than anyone else—it remains for him to broaden and deepen his conception of the environment by a thorough-going analysis. Let us hope that with the war out of way, that we will have the opportunity, the energy, and the understanding to play our roles in the "years of the modern, years of the unperformed" (22).

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SCHILDER'S MIND: PERCEPTION AND THOUGHT AND GOALS AND DESIRES OF MAN

A SPECIAL REVIEW

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SCHILDER, P., Mind: Perception and Thought in Their Constructive Aspects. New York: Columbia Univ. Press, 1942. Pp. xii+432.

SCHILDER, P. Goals and Desires of Man. New York: Columbia Univ. Press, 1942. Pp. xii+305.

Academic psychologists have viewed with a mixture of healthy agnosticism and pathological skepticism the attempts of psychiatrists and psychoanalysts to formulate a systematic psychology. This kind of attitude has both advantages and disadvantages. Its principal advantage seems to lie in the fact that any new attempts to bring all of psychology under a single theoretical superstructure must be subjected to a careful and painstaking process of verification before being admitted to the inner circle of psychological "schools" and "isms." Obviously such a procedure eliminates much of the pseudo-scientific and quasi-scientific psychological theory that might otherwise creep into the discipline from many spontaneous sources. On the other hand, this indifferent and oftentimes negative reception can, if not objectively treated, lead to the premature discarding of much valuable material. Because of this latter possibility, the author has undertaken a critical review of the last two published books of the late Paul Schilder, hoping to shed some light on the question of their true theoretical merit to academic and clinical psychology.

The two books, both of which were published after the untimely and unfortunate death of Dr. Schilder are: *Mind: Perception and Thought in Their Constructive Aspects* and *Goals and Desires of Man.* It was Schilder's hope to do a comprehensive study of the pyschological data he had observed in his clinical experience and research and to combine these data into a single systematic framework of psychology. Schilder intended this systematic treatment to occupy six volumes. He did not intend this theoretical framework to be of use only to psychologists and psychiatrists but had hoped that it would mark a contribution to the advancement

of science in general. The other two published volumes that constituted the major expositions of his system were: *The Image and Appearance of the Human Body*, published in England in 1935, and *Psychotherapy*, published in New York in 1938. Both have been reviewed elsewhere. Still two other volumes on Sociology and Art were only partially completed at the time of his death and have not as yet appeared in print.

It is the purpose of this paper to review his last two published books and to attempt an evaluation of them in terms of existing psychological theory. To do this it will be necessary to borrow freely from his other published works, particularly the volume entitled *The Image and Appearance of the Human Body*, for much of Schilder's material was based upon methods of investigation developed in that study.

Mind: Perception and Thought in Their Constructive Aspects

This treatise represents Schilder's efforts to create some order and unity from a great quantity of empirical data obtained from his clinical experience, his research, and the publications of other investigators. Admittedly, it is a Herculean task to undertake a synthesis of a great deal of our principal psychological knowledge, to say nothing of the enormous complications that are added to such a task by drawing freely from other disciplines such as psychiatry, physics, physiology, etc. Schilder did not stop here, however, for he tried to incorporate this tremendous amount of material into a single and consistent set of general principles. Although the present reviewer does not agree with all of Schilder's ideas, he feels that the work deserves high praise and the careful attention of all who profess an interest in the human being and its manifold operations.

Starting with the problem of perception, Schilder attempted to disabuse the reader of the notion that its data are not reliable. He was firmly convinced that too much emphasis had been placed on the intrinsic value of pure reason by many philosophers and psychologists at the expense of neglecting the fundamental relation that exists among the world, the body, and the self. Adopting a somewhat genetic viewpoint, he engaged himself with the task of discovering the principles of the development of perception from its primitive origins. Reviewing the attempts of certain investigators to localize the most primitive forms of perception in the intermodal experiences of the various senses, Schilder concluded that the answer to the question of the primitive aspects of perceptual experience was not to be found in any qualitative elements or attributes which were assumed by such investigators to be common to all the senses. He did feel, however, that of such views the ones that made motility the common feature of the various senses offered more than the others; however, even motility was felt to be insufficient since he believed that it overlooked the importance of the sensory-motor-vegetative units as such.

As have so many investigators, Schilder singled out the optic field as the sense modality for special attention, without however, neglecting the data of the other senses. The optic field is described as being primarily in a state of continuous, almost rhythmical, movement. While color may be connected with this motion, it is not a necessary aspect of the primitive visual field. Furthermore, "primitive optical experiences are not fully differentiated with regard to the objective and subjective parts of experience. They are in space and indeterminate in reference; . . ." Whether the attribution of subject or object is in the foreground of experience is seen to depend upon the emotional attitudes of the individual.

The point of major significance in the discussion of perception is the formulation of the developmental transition, starting with very primitive stages of experience, to complete experience. This transition takes place in "the process of active reality testing which participates in the creation of gestalten." Perceptions were not conceived as merely outwardly projected sensations, for there existed an ever present distinction between the outside world and the self. He believed that the subjective distinction that was involved was based upon the process of really active experimenting and testing and upon constructive efforts on the part of the individual rather than upon a passive impressionism. He objected to Gestalt psychology as such because of its denial of experience in the formation of gestalten. Indeed, he even went so far as to liken perception to the solution of a jig saw puzzle, where the final picture is created by actively testing in experience the position of the various parts in relation to the whole. The whole or final shape is reached by a process of continuous testing, changing, and rechanging. This process of testing reveals the true nature of the real units of experience, and these units of experience (gestalten) crystallize only through an active process of construction.

It follows that the problem of Gestalt formation is thus not only a perceptual one but also a motor probiem, regardless of the fact that either the sensory or the motor factor may be in the foreground. In the process of experimenting, satisfactory (to the individual) patterns of perception (gestalten) are attained. There is a "piecemeal construction and destruction, and organization in definite configurations which may mature from primitive to higher stages of development. Primitive experiences show variability in size, number, direction, space, distance, and rhythmicity. . . . Construction of the object, with a continuous interchange until a comparative stabilization (gestalt) is reached, seems to be the basic principle for the organization of the senses." Primitive perception is marked by a turning toward the source of stimulation. Schilder did not believe that the final aim in life was to incorporate objects into one's body, as claimed by psychoanalysts, but that the construction of the object was essential in itself, and not merely because the object might sooner or later be of some use to the individual.

Considerable mention was made of the problem of space and time perception from which Schilder concluded that the two were inherent factors in every experience. They cannot be considered apart from experience, for they, too, undergo a constructive elaboration. Space and

sensory-motor experiences are essentially inseparable and the development of space perception parallels the development of action. Space perception is seen as a function of the libidinous structure of the individual and is, therefore, a decidedly social phenomenon. Since, for him, ideas of space develop around the erogenous zones and in close connection with the fundamental biological drives of the individual, the final appreciation of space is dependent upon the appreciation of personalities. Time, as space, was thought to depend upon libidinous drives and thus to have a strongly marked social factor. Summarizing, Schilder stated that "space and time are in the closest relation to action and drives in quite the same way as is any other perception of the senses." The correlate of the unified action of space and time is to be found in the functioning of the vestibular apparatus. Action is not based upon simple reflexes but is rather closely correlated to the structure of the perceptual world.

Summarizing Schilder's views on perception, "—it is shown that primitive perception develops into a more complete conception and the acknowledgment of objects, through a process of experimentation in which all senses, as well as the motility and the vegetative functions, participate. We have termed this process a constructive process. The rather indefinite and changing experiences become crystallized in the form of more definite units. We also call these units configurations and gestalten. Unquestionably this development is not simply the result of experimentation, experience, and nurture; maturation and the inherent quality of the organism play an equally important part."

Leaving perception, Schilder addressed himself to the task of discovering some unifying principles not inconsistent with those used to explain perceptual processes, to explain the higher mental functions found in man. Starting with a discussion of language, he came to the conclusion that the meaning of words and sentences was "the sum total of the sensory-motor attitudes concerning the expected objects. This sum total is unified in the preparedness to action, or in action as such." The further development of language was conceived as a by-product of the process of getting food and sexual objects. Schilder differentiated between the use of sign and symbol. The symbol is partially identical to the referent. For example, he cited the symbol in psychoanalysis which is partially identical with, or similar to, the referent in the unconscious. This symbol relationship is particularly well developed in primitive language. On the other hand, Schilder believed that the symbol tends to lose its inner relation of similarity to the referent as language develops and, indeed, becomes a sign. He indicated that the correct understanding of language must precede any clear scientific work and progress. Schilder concluded his remarks on language by stating that in the development of language there is a tendency for the careless use of single experiences as a pattern for action to give way to individualized action fitting specific situations.

Memory and thinking are discussed and the conclusion reached that thinking can take place, no matter how cursory, only when there exists some previous experience, even though this previous experience might not be fully remembered. At least, any past experience has the possibility of being remembered. Schilder's concepts of memory and thinking are

quite intimately connected with his concept of learning, which sounds much like the old law of exercise. He looked upon learning as the process whereby memory is facilitated by repetition. A great deal of learning was thus thought to occur without any active wish on the part of the individual. On the other hand, and seemingly contradictory, Schilder believed that learning is always practical and is given up when the individual can no longer be convinced that he is profiting by it.

Schilder approached the problem of memory from a somewhat psychoanalytical orientation. Loss of memory was thought of as primarily a case of selective forgetting by which certain situations and experiences are avoided. He distinguished between superficial and deeper types of repression. However, he maintained that repression does not destroy memory traces but merely makes them inaccessible. Finally he argued that the constructive process does not terminate with the first formation of the trace but continues as long as the individual actually tries to remember something.

In its final stages thinking quite closely approximates action. It is a direct preparedness for action directed toward the outside world and during the process the world is either partially or completely represented to the individual in pictures. When disturbances do arise in thinking, they are merely incomplete phases in the process of reality construction. Insight is defined as being an expression of the same basic forces which take place in thinking and perception, while consciousness is defined as a preparedness and readiness for action which is constructed in thinking and perception. Schilder felt that consciousness was not an independent phenomenon but a process of trial and error in perception and thought which continued until the object and outside world were reached. "Consciousness is in itself self-consciousness. It is an attempt to bring experiences into a context. We may also call this context an ego from an analytic point of view."

In summarizing this book we may say that consciousness, perception, and thought are all, in final analysis, social phenomena. They all represent the attempts of the individual to reach some final construction which can only be done against the resistance of the outer world. They do not represent passive phenomena, but dynamic, active processes by which the individual constructs an orientation towards the outer world. The individual is in a constant state of trial and error, constructive and destructive action, by which he achieves a reality orientation. In spite of the fact that we may perceive only phases of reality of the world in which we live, Schilder steadfastly argued that there is no real reason to assume that our approach to the world by such an active process is unreliable. Experience depends upon action, while action is modified by experience.

Goals and Desires of Man

In this volume Schilder attempted to relate the basic motivation and purposiveness of man to the principles of his general theoretical system. He indicated that since human personalities demonstrate a specific character, irrespective of a communality of experiences, one's ego has, therefore, a certain uniqueness, specificity, and constancy. Accordingly,

there is an exclusive life history for each individual based upon the unique quality of the ego and the connection between its single experiences. This correlation is a product of the collective functions of memory, construction and configurations. As psychoanalytic investigations tend to indicate that there is an uninterrupted chain of experiences in an individual's life, it is the task of psychology to uncover such a sequence for each individual. To understand completely the connection between the single experiences of a given person requires an understanding of the motivation of these experiences. However, it is well known that much of our behavior is motivated by processes with which we are not directly aware. Accordingly, Schilder believed that the only way to understand the various experiences of an individual, and their motivation, was through a direct observation of the typical sequences in the outward world of that individual. The ultimate validity and reliability of psychological data is thus seen to depend on the extent to which such typical sequences can be established.

Schilder was in disagreement with certain of the fundamental Freudian views regarding human motivation. He felt that Freud was mistaken in his belief that human beings ultimately strive for relaxation and rest because he overlooked the fact that people strive for objects and goals, not for satisfaction itself. When an individual attains some specific goal, he sets about at once for some new one. People are always actively constructing their outward world and not seeking mere passivity. Thus for Schilder the motor functions of an individual could not be overlooked for they play an important part in this process of construction and reality testing for the individual.

Starting with an analysis of aggression, Schilder pointed out that every attempt to study it in isolation is quite futile since it is not a general quality of behavior but has meaning only in a specific situation. He felt that aggression was closely related to the erotic impulses and that the profoundest relations of man to man were of an erotic sort. Children show more aggression against human beings when they do not regard the other's body as having a personality. He felt that psychoanalysts had overemphasized the importance of aggression and did not take into account the fact that each individual has a deep interest in the world in which he lives. Man is thus seen to be basically social and interested in keeping the world with living beings in it. When aggression and destruction do appear they are functions of a final construction which leads to the crystallization of specific gestalten. Schilder contended that it is basically false to consider human activity in general as merely a process of transformation of primary, innate destructive tendencies. Much aggression in adults is simply the expression of a false ideology by which masculinity and femininity are related to aggression and submission.

One of the basic tenets of psychoanalysts, such as Freud and Menninger, is the so-called death instinct by which individuals presumably are motivated to self-destruction in order to return to a state of complete rest. Schilder's attack on such a pessimistic attitude was relentless. He contended that people at no time really want to die. Even people who are dying a horrible death do not want to die but merely want relief from their

tortures. As Schilder put it, individuals live "and they expect that they will continue to do so." Direct observation of children and adults failed to confirm any death wish. Schilder had done much research on the observation of attitudes toward death, and did not base his contentions on theoretical speculation. He was of the opinion that at least part of the difficulty with the psychoanalytic formulation of a death instinct was to be found in the tendency to consider the word "death" as a clear-cut entity, and thereby failing to consider the variety of processes covered by it. For him, death was not the true opposite of life but merely the end of life. "There are not only major catastrophes in human lives; minor catastrophes (occurrences, accidents) occur continually. This is merely a reformulation of the fact that there exists an independent world, which goes its own way. The individual confronted with this world tries to construct the data of experience so that he can live his own life and achieve his own aims and goals. According to this formulation, death is an accident, like a flood or an avalanche."

Sex, and its biological and psychological ramifications, are given much attention by Schilder. Starting with the biological aspects of sex, he pointed out that sex and procreation are quite independent of each other. The difference between male and female cells is not fundamental. Each has merely repressed the other's characteristics and potentialities. Sex itself is considered as an expression of incompleteness with an ultimate urge for completion. The individual seeks to complete itself in sexual union; however, Schilder added that in the whole world of organisms there is a drive not to remain static in completeness but to go from completeness to incompleteness.

Schilder agreed with Freud that the psychic apparatus consisted of three aspects: id, ego, and superego, but believed that they were not mutually exclusive entities. He further agreed with the concept of an Oedipus complex but was skeptical of the strength of aggressive tendencies in children, feeling that the psychoanalysts overlooked all the experimenting and construction going on in children. He did not accept the concept of narcissism as such because it did not take into account the fact that knowledge of one's own body is in no way prior to knowledge of the bodies of others.

Discussing the concept of masculinity-femininity, Schilder stated that there is no fundamental difference in the psychological attitudes of men and women, except with regard to the sex functions and the up-bringing of children. He disagreed with the attempts of some psychologists and psychiatrists to base the concept of masculinity-femininity upon a dichotomy of aggression-submission. That women have any marked tendency to prefer to be men was denied and thus he did not agree with the psychoanalytic concept of penis envy.

Schilder undertook an analysis of the problem of human ideologies and indicated that "the individual's goals and aims, his failures and successes, are determined by ideologies." He argued that since goals and aims have to be adapted to reality, there is no difference between psychology and ethics. Both are concerned with values which come from contact with other human beings and real objects. "Whenever we come

nearer to reality in our thinking processes or in our perception, we have achieved something in the moral world." Thus, man is visualized as an organism actively seeking contact with his world by which he may become realistically orientated and by which his actions may be guided.

In summarizing this volume, the following points are of special interest. There is a gross sort of causality in psychic experience, but it must not be carried too far. Just as there has been shown an indeterminancy in microphysics, psychic processes are not completely determined by the laws of causality. Drives, desires, and instincts all have aims and purposes and go beyond the mere process of satisfaction as such. Individuals strive to participate in a world which does not just passively exist but which invites participation. While destructive tendencies do exist, they are merely parts of a larger constructive process by which people learn about their world. This constructive effort leads to work which is in final analysis a social act, as are all acts of man. Culture, civilization, habits, customs, mores, all represent crystallizations of constructive human efforts which have led to a change in the outside world. Man evolves in this world as an experimenting agent who is constantly trying to drive into the future by trial and error, and thereby find happiness. Only when the individual strives in his environment and in the world will he achieve full emotional experiences and evolve as a full personality. Life is not directed towards the past but towards the future. From this constructive process rise comparatively stabilized configurations which serve as a basis for knowledge and for action. This constructive value of life is the paramount issue in psychology.

Analysis and Interpretation

At once it is clear that Schilder did not handle his subject in the manner of academic psychologists. In lieu of sections on learning, intelligence, etc., there are sections dealing on homosexuality, sadomasochism, etc. The psychologist will also miss references to such pioneers of theoretical exposition as James, Wundt, Titchener, and Hall, but will find in their place many names that are unfamiliar to him. This is partly the result of Schilder's European background and partly the result of his more pronounced psychiatric inclinations. Much of the material is of a psychiatric nature and, indeed, about all of the case material presented, of which there is a generous amount, is taken from psychiatric practice rather than from the field that most of us understand as clinical psychology. Finally, many psychologists are likely to be at odds with Schilder's work because of a paucity of laboratory and statistical verification. Such individuals should, however, quickly disabuse themselves of the notion that nothing of value can come from mere qualitative descriptions, for while many of us are seeking ways to increase the mathematical validity of our data, few of

us have the opportunity to observe first hand the great gamut of human behavior which Schilder viewed in his professional career. It may be well argued that the very best of scientific control and mathematical exposition are of little value in cases where the data so studied are not accurately observed. It is not to be inferred from the foregoing, however, that Schilder did not document his ideas with considerable evidence, for the corroborative material is tremendous. The point is that his data are not treated in the same way as are those of most theoretical psychologists.

Schilder approached the problems of psychology from a viewpoint of naive realism, as have Freud, Jung, Adler, Dewey, and Russell. He did not agree with all of Freud's principles of observation, however, as he felt that Freud based too many of his ideas on the concept of projection which appeared to Schilder as too strong a tendency to revert to Schopenhauer's concept of representation. Schilder believed that Freud also overemphasized the concept of causality in psychic events, although he himself felt that there was as much evidence for causality in psychology as, for example, is found in physics.

The greater portion of Schilder's work was compared by him to that of the psychoanalytic school. He disagreed on many points and in many was in direct agreement. It is interesting to note that his interests did not completely coincide with those of the psychoanalytic group. He studied somewhat under Freud but remained unanalyzed. However, Schilder considered himself a psychoanalyst in the true sense of the word, feeling that he had observed Freudian heritage better than many of those who kept to him personally and followed his words literally and mechanically.

The principal distinction between Schilder's views and those of Freud concern basic forms of human motivation. Schilder did not agree with the Freudian postulation of a death instinct. He felt that it was too pessimistic an outlook for man to assume that he was merely struggling for rest and relaxation. Indeed, Schilder was himself fundamentally inclined towards an optimistic outlook on life and did not agree at all with such pessimistic philosophers as Schopenhauer and Heidegger who contended that man's life was continually lived with a thought and knowledge of impending death. On the contrary, Schilder felt that life had meaning: that there was a purposiveness in life which invited participation rather than passive acceptance. One almost gets the feeling that Schilder believed there was a transphenomenal requiredness operating be-

tween the world and the individual, although such an epiphenomenological viewpoint was not stated. That Schilder did not have the opinion that the world served as a mechanical determiner of behavior is quite clear, even though a casual perusal of his writings might lead one to believe that he held to a mechanistic theory of life.

Schilder did not devote any time to the old mind-body problem as such, although he had certain inclinations which he tended to follow. While he believed that psychological processes depended on cortical processes, he did not feel there was any evidence to support the view that there existed a direct cortical representation, by symmetrical connection of excited points, of all psychological processes. He had a pronounced tendency, however, to regard mind as an active process of experimentation and not as a localizable entity. He felt that if psychologists were careful in their observations there would be no need for animal experimentation or, indeed, proof of their work in any other field than their own. He was strongly of the opinion that psychological insight does not impair the results of objective investigations, but rather helps to yield a deeper understanding of them. As a matter of fact he maintained that "when animal experimentation invades the field of higher nervous activity and behavior of animals, it should not be forgotten that its results cannot be valid when contradicting acknowledged results of psychological research."

It is upon such points that the present reviewer is most heartily in accord with Schilder. There seems to be too much tendency by some psychologists to regard human experimentation and observation as nonobjective, while animal work is accorded the status of a pure science. This is an example of a false conception of what is meant by scientific method. As such, science is a method and nothing more and any attempts to make of it anything else are bound to lead to an artificial confusion. As a method, science is as applicable to human as to animal investigations, even though the controls may be more easily obtained in the latter fields. On the other hand, clinicians should not be led to the place where they minimize the value of objective observation. Both clinical and laboratory investigations must go hand in hand if the real nature of human behavior is to be discovered.

This reviewer was rather disappointed in Schilder's somewhat naive and contradictory viewpoints regarding learning. To be sure, he did not devote much attention to this problem, but his

conception of learning as blind repetition seems to be quite out of line with the tremendous amount of work done on it in this country. He insisted that learning continued only as long as there was any practical advantage from it to the individual. He defined it as mere repetition which facilitates remembrance. The inadequacy of such an assumption will appear obvious to any psychologists who are acquainted with the work of Köhler, for example.

Finally, it may be said that the merits of Schilder's work are far in excess of the inadequacies. He undertook a rather difficult task and succeeded brilliantly in executing it. His principal contribution seems to be in his insistence upon viewing man as a dynamic, well-integrated, and active organism, constantly striving to achieve meaning and position in a world. Metaphysical speculations are not present in these books, which is decidedly a point in their favor. It is also refreshing to see an attempt to reach a theoretical formulation of human behavior not based entirely upon laboratory investigations but in part upon a direct observation of the human being *in situ*.

These books will probably not be monumental in the sense that certain of Freud's works have been. Neither is it likely that they will revolutionize psychological thought. They will, however, demand the attention of all psychologists who are interested in clinical work. For such purpose they are crucial, because within them rests a mass of important information. Perhaps had these books been published 40 years ago they would have taken their place in the hall of psychological fame. At least as far as this reviewer can determine, the death knell has been sounded for great psychological systems. We have now come of age. Startling discoveries and theoretical systems will find an ever increasing inertia of preformed opinion to overcome before they can hope for success. It should stand as a monument to Schilder's memory that he was willing to try to overcome this inertia. It is, indeed, very regrettable that he did not live to continue his very important investigations.

A NOTE ON THE AGE-PLACEMENT OF BINET TESTS*

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There appears to be some confusion on the part of Garrett, Guilford, McNemar, Richardson, and Terman with regard to the criterion for allocating Binet tests to their proper age level. Richardson (4, p. 26) states that the criterion is 50% of age passing; Guilford (2, pp. 210–211, 409) asserts that in the light of our present knowledge of psychophysical procedure it should be 50% of age passing, but that for some reason Binet adopted another standard that was rough and ready; McNemar (3, p. 87) states truly that the 50% criterion is impossible, but gives no reason beyond the assertion that it does not matter; Terman (5, pp. 154–155) presents irrelevant reasons to show why the 50% criterion does not work ("the rapid rise of the age-progress curve in the early years and the resulting drastic changes in percents passing, plus the increase in spread at the later ages" (1, p. 197)). Garrett reviews a part of the controversy (1, pp. 196–197) and adds his opinion that "essentially the allocation of test items to specific age levels boils down to a cut-and-fit process. The authors could have saved much space by saying so at the outset."

It can nevertheless be shown by examination that the 50% criterion is amenable to logical reasoning. The existing confusion arises chiefly out of the fact that in the Stanford revisions of the Binet tests the tests are grouped into batteries of six, usually one battery for each year, and that, except for scatter of correct responses, an entire battery of six tests rather than a single test must be passed to earn the subject credit for the full year. If we assume, for the sake of simplicity, that subjects pass all tests until they fail one, and that they fail all thereafter, we can eliminate scatter from our discussion. Then it is apparent that of ten-year olds, for instance, 50% must pass all six tests in the ten-year battery in order that the average M.A. of subjects of C.A. 10 be ten. The 50% criterion is properly applicable to the battery, rather than to any individual test.

Now, if the 50% criterion were used for each test, the proportion at any age level passing all six tests at that age level would depend on the intercorrelation between the tests. If there were

* I am indebted to Prof. Henry E. Garrett for having read the preliminary draft of this note and for suggestions on the elaboration of certain points.

only a chance relationship between tests, then, if 50% passed each test, only 25% would pass two tests, 12½% three tests, and 1/64 all six tests. On the other hand, if the correlation between tests were perfect, then if 50% passed any one test 50% would pass all six tests. As the correlation between tests varies from zero to one, at any given age level for subjects at that age level, the proportion passing all six tests varies from 1/64 to ½.

Conversely, if the 50% criterion were maintained for the entire battery of six tests at any given age level, then the proportion passing each test would vary from 89.09% (the sixth root of ½) to 50%, as the correlation between tests varied from zero to one. This is the condition that the Binet tests must satisfy.

Of course it is not necessary for a subject to pass all tests at a given age level to attain that mental age. It is possible and usual for him to scatter his correct responses. But then the intercorrelation between tests outside such age level and tests within that level must also be considered.

If there were only one test at each level, the 50% criterion for each test would be workable and correct. But as long as there is more than one test on an age level and the contribution of each test is less than a full year the 50% criterion will not work.

Prof. Garrett is correct when he states that the allocation of tests to age levels is a cut-and-fit process. But the fact to understand is that in the fitting the percent passing must on theoretical grounds be more than fifty, and that under no circumstances short of perfect correlation could the 50% criterion possibly work.

It should be noted further that the explanation offered by Terman and Merrill in 1937 (6, p. 22) is perfectly correct, though sketchy: "Other factors, such as the intercorrelation of the tests and the shapes of the curves of percent passing, are also involved."

It has been assumed throughout this discussion that the normal curve is applicable, and that the distribution is continuous.

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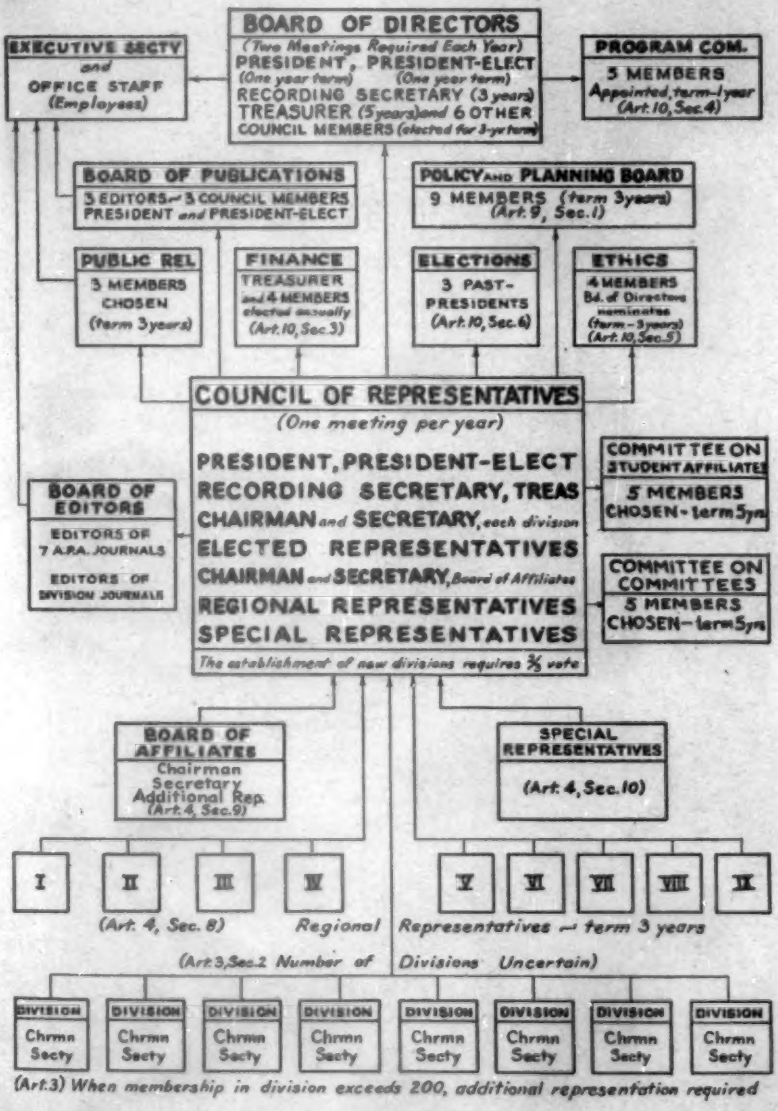
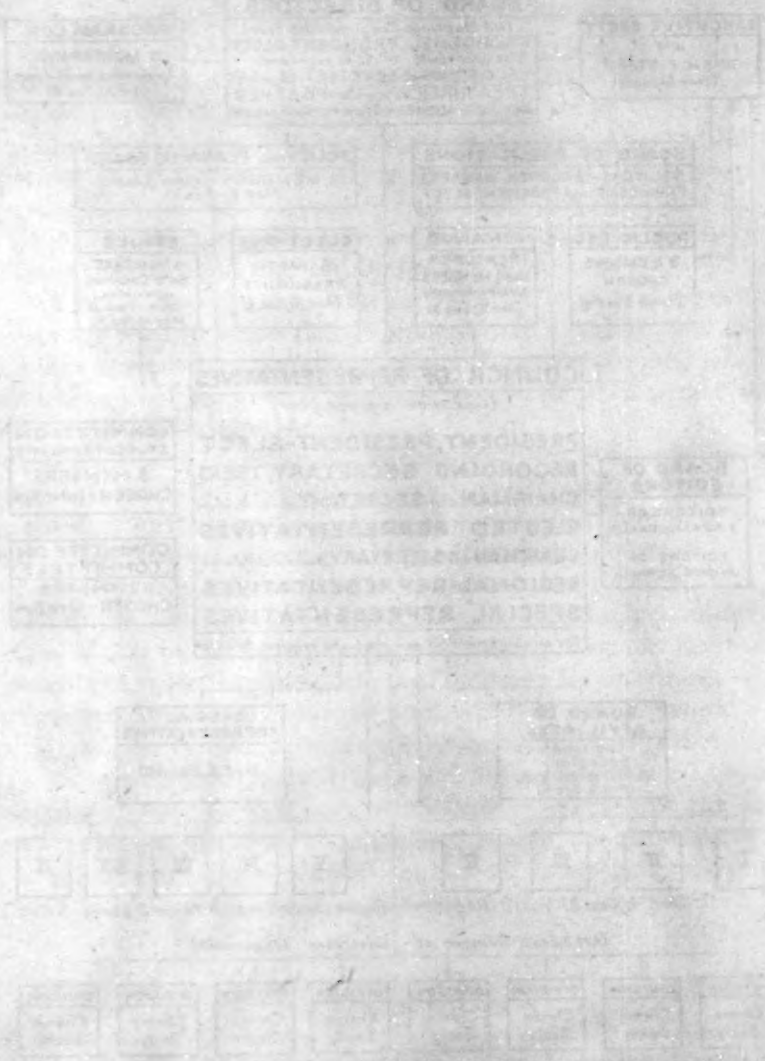
CHART OF THE PROPOSED APA REORGANIZATION*

WILLARD L. VALENTINE AND JOHN E. ANDERSON



* This chart shows the schema for the reorganized APA. Since the most careful reading of the proposed By-Laws allows several alternative arrangements of the agencies of the Council of Representatives, the authors invite others to study the proposed By-Laws and report their findings to the members.



PSYCHOLOGY AND THE WAR

Edited by

DONALD G. MARQUIS

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OCCUPATIONAL AND VOCATIONAL REHABILITATION*

RICHARD M. ELLIOTT
University of Minnesota

Total war has resulted in the occupational dislocation of many millions of persons. Before the fruits of returning peace can become real, vast readjustments in the life of the nation and in countless individual lives must be effected. Swollen war industries must convert or be liquidated. Labor has to find its way out of war jobs into normal employment. Military personnel must return to peacetime jobs. Disabled soldiers must be helped to become self-supporting and socially useful persons. An orderly, and in some respects a new, peacetime economy must be built. In this tremendous task alert psychologists can foresee that their profession will be called on to play many substantial roles. Not the least important of these—it may turn out to be the most important—is to provide more and better occupational diagnosis and guidance. The demand for it exists. Unprecedented expansion in the use of the sound and useful methods which have already been developed is a real possibility. Ideally diagnosis and counseling should be provided wherever there is a soldier or a civilian who needs it.

How completely inadequate the nation's present facilities are is shown by recently published figures, obtained through the U. S. Public Health Service, estimating the number of physically impaired men, only, between the ages of 15 and 64, who need selective placement at over six and one-half million, the number who need rehabilitation before employment at over one million, and those who need "extensive rehabilitation and sheltered employment" at an additional three hundred fifty thousand. These figures include both men who are in and those who are not in our labor forces, but it excludes men who are essentially invalids or who are in institutions. By far the largest group of those who need selective placement are the males with some chronic disease, while

* Indispensable aid in the preparation of this statement has been supplied by Donald H. Dabelstein, Director of the Division of Vocational Rehabilitation, Minnesota Department of Education, and Donald G. Paterson, Professor of Psychology, University of Minnesota.

Every person and especially every psychologist interested in rehabilitation should consult four important articles which appeared in the Psychology and War Section of the *Psychological Bulletin*, Vol. 40, November, 1943 (2, 4, 5, 6).

nearly one-half of those needing rehabilitation, mild or extensive, before employment suffer from orthopedic impairment (1).

Congress, recognizing that in two areas the need is urgent, has this year passed two laws, similar in many respects, one expanding the program for the vocational rehabilitation of physically handicapped *civilians*, and the other providing for the vocational rehabilitation of *veterans* of World War II whose employability has been destroyed or threatened by a disability incurred in service (4). Under the 1943 law providing aid for civilians (Public Law 113) the program is to be administered on the federal level through the Office of Vocational Rehabilitation of the Federal Security Agency. Federal funds are to be made available to pay the entire administrative costs of approved State programs but the states are expected to pay one-half the cost of the services extended to disabled persons, who must be 16 years of age or over and re-employable. A valuable feature is that the Federal Security Administration is authorized to conduct or to pay for courses of instruction, not to exceed six weeks in length, for the professional personnel of the rehabilitation staff. Costs assumed by the government include tuition, books, subsistence, and traveling expenses. While psychologists will regret the imposed limit of six weeks, they should note two things: first, that a most important principle has been accepted and, second, that we are starting almost from scratch. If anyone has supposed that a six weeks course can adequately train specialists in vocational guidance he has not yet grasped the *professional* nature of the work. Recently we have seen the Army, in wartime, providing a course 24 weeks in length for men who will do certain kinds of personnel work requiring psychological training. The men who complete the course cannot be commissioned without receiving further professional training.

As an interesting indication of future opportunities in the rehabilitation field it may be worth while recording that at a recent conference of State Directors of Vocational Rehabilitation held under the auspices of the Federal Administration a scale of salaries was proposed which, if adopted, would compare favorably with the salaries prevailing in other fields of applied psychology and would be rather higher than academic salaries, at least in the low and middle academic ranks. The normal scale for Rehabilitation case workers, as proposed, runs from $2800–$3400, with a minimum in any state of $2400. Senior rehabilitation workers would receive $3400–$4000; an Assistant State Director, from $4000–$4600; and a State Director from $4600–$5200.

What can a properly organized rehabilitation program do? We all know in a general way that its fundamental purpose is the conservation of human resources and that it aims to assist persons who have suffered from accident, disease, or congenital disability to establish themselves in full-time employment. Services which may be rendered include individual diagnosis, counseling or vocational guidance, medical and psychiatric examination, training, and—when necessary and where financial need can be established—surgery and therapeutic treatment, hospitalization, prosthetic appliances, occupational tools, equipment and licenses, and transportation and maintenance during training.

The duties and responsibilities of a rehabilitation worker are fundamentally like those of a worker in the general occupational adjustment field, though in at least two respects his task is more difficult. First, his responsibility extends continuously from the time of referral of a case throughout a long series of contacts which culminate in adjusted employment. Second, he must draw on a wide background of professional knowledge and experience, since the disabled group with which he works is a typical cross-section of the general population in respect to age (above 16), educational background, social and cultural environment, previous employment, and job capacity. He is equipped with an asset of great value if he has derived some of his knowledge of various types of jobs from industrial experience. He should be a mature person and one sharing the interests which characterize successful adult workers in the general personnel group of occupations.

To indicate in what respects rehabilitation work is psychological in nature, and to give some idea of the sort of training which is, or should be, required of a personnel staff, rehabilitation services may be divided under four heads: Selection and Diagnosis of the Case, Counseling, Rehabilitation Procedures, and Placement.

Selection and Diagnosis of the Case

Basic data to determine eligibility for rehabilitation and to estimate the chances of success include an appraisal of the residual physical abilities of the client, his mental ability, his personal and social adjustments, his special aptitudes, interests and personality traits—all to be weighted in relation to what will be required for successful preparation, adjustment, and performance in an appropriate job. Formal testing procedures and interviews with the client are supplemented by school records, reports from friends, parents, teachers and others who may have observed significant

emotions, attitudes, interests and aptitudes, reports from social and welfare agencies covering family and social relationships, and employment records. The diagnostic techniques are identical with those applied in any clinical guidance program. The worker must know the uses and the limitations of psychological and clinical data, and he must be able to sift dependable from undependable evidence and to distinguish between relevant and unessential data. The more thorough and objective his analysis of a case the greater will be his tendency to emphasize general and specific potentialities for job adjustment rather than physical disabilities.

Counseling

The future welfare of the disabled person and his dependents is contingent upon the quality of the counseling he receives. Consultation begins with explaining to the client the foundations on which every sound and wise vocational choice rests. Emphasis is laid on the desirability of cultivating self-understanding of one's assets and liabilities without allowing recognition that the liabilities exist to divert one's primary and positive concern from the assets. The techniques are the same as those used in counseling persons who are not disabled. They include providing the client with plain facts as to the demands upon abilities, physical strength, and skills made by various jobs, and the opportunities for employment in them (**2**, **6**). The client must be supplied with information and must cooperate actively in working out his own occupational goals. The plan of preparation for employment must be feasible and congruent with the individual's potentialities and physical condition, and he must know *that* this is so, and know *why* it is so. Since the over-all purpose is to alleviate maladjustment the goal must be acceptable, intellectually and emotionally, to the client. He must see it as his own responsibility to make whatever effort will be required to attain the goal.

Rehabilitation Procedures

The restoration of the disabled person to employment is a cooperative task which may involve a wide variety of community and state resources. A rehabilitation counselor must know exactly what resources may be drawn upon and secure whichever services may be needed to prepare his client for employment. These services include medical care, surgery, hospitalization, fitting out with artificial limbs or other prosthetic appliances, supplying occupa-

tional tools and equipment, licenses, and, most frequently of all, training.

Since the rehabilitation service does not maintain its own training facilities, it must contract with established agencies for the particular training required in each case. Knowledge of a great variety of training resources, and knowing just where each is located geographically to determine whether its use is feasible, and judgment as to its appropriateness in all other respects for a particular client, are all absolute essentials for the rehabilitation worker. In many instances it becomes necessary to arrange suitable modifications in existing training, and even to stimulate the setting-up of a wholly new training opportunity, in order to secure just what is needed for a particular client or to prepare a group of clients for a relatively new vocational outlet.

The rehabilitation worker needs to understand the principles of learning, and how they apply in a wide variety of situations. If his psychological background is deficient in this respect—if, for example, he does not grasp the differences between typical learning in school and "learning by doing"—he may try to hold the client to a regime of retraining under which he will become discouraged, decide to discontinue training, or even slide into an attitude of general defeatism. On the other hand, skilfully directed vocational training may be a tremendous morale builder, by giving a disabled person a method of compensating constructively for unalterable handicaps, and at its best restoring the long withheld right of a person who has "felt different" to hold his head as high as anyone else in the self-sustaining community of workers.

The rehabilitation worker cannot relinquish either advisory contacts with the client, or supervisory contact with the agency or agencies supplying service, until the restoration is complete. He is responsible for the expenditure of public funds, and he must assure himself that all is going well, or if not, after restudying the case, promptly introduce the called-for changes.

Placement

The test of rehabilitation is permanent and appropriate employment of the client, in the regular business and industrial world, at a job consistent with his ability and preparation, and at a wage commensurate with that paid other workers in a similar occupation. This is often a formidable assignment and the counselor must surmount many difficulties which block its realization at the

beginning, or which threaten its continuance once a placement is made. The rehabilitation worker has to be well posted on employment trends and opportunities. He must be thoroughly familiar with the placement techniques used with the able-bodied by such agencies as the U. S. Employment offices. He must have a good knowledge of the psychology of accident proneness and prevention, and of workmen's compensation laws and a disabled person's rights under these laws. He must apply with skill and tact the most effective methods of surmounting employers' prejudices against hiring handicapped persons (3). Following placement the rehabilitation worker cannot safely lose touch with his case until he is certain that the client has acquired the skills needed to hold his job and to escape exploitation or discrimination based on his disability. It is clear that in all this the worker will need knowledge, technical skill, patience, imagination, understanding, and persuasiveness. He should inspire confidence through his pleasant and effective way of meeting people, either individually or in groups, and through his maturity of judgment and good common sense.

The Need for Psychologically Trained Personnel

From the above summary description of vocational rehabilitation work it can immediately be seen that many of the technical methods employed are those of psychological testing and measurement, psychological personnel work (especially individual diagnosis and job analysis), and clinical psychology (5). Yet the plain fact is that in 23 years since passage of the original Federal Vocational Rehabilitation Act and appropriation of funds for state use, only a few states have employed psychologists as rehabilitation workers. They constitute but a microscopic percentage of the total group of 314 persons employed in this field by all states together in 1942—a number soon to be increased, it is hoped, to double its pre-war size. This situation should be corrected, and it will be if the psychological profession is quick and realistic in following through its recent gains and if our profession can persuade administrators that rehabilitation work must be put on a professional basis. Psychology has won prestige by notable technical contributions to the sweeping educational trend toward the use of individual guidance at all school levels, by its role in helping to set up sound public and private employment procedures, and by its conspicuous accomplishments in the personnel systems of the armed forces.

Stepwise with measures to bring more psychologists into rehabilitation work, there must come a recognition that a more specialized division of labor in this field is inevitable. The specifications laid down above for the rehabilitation worker do indeed represent him as the very model and paragon of versatility. He is pictured as capable of being all things to all men—and is correspondingly hard to find in flesh and blood. So here, as elsewhere in the development of an expanding profession, specialization of function must come. The time is ripe for it, and the means to pay for it have already been appropriated in part, and more will be forthcoming.

To be sure, this specialization can in some respects be accounted a loss. In the above picture the typical rehabilitation worker has been represented as a single case-selecting, case-diagnosing agent who thereafter assumes complete, continuous and sole responsibility for counseling the client through whatever successes and vicissitudes of training and employment may befall him. Under many circumstances this has been the most feasible arrangement. Perhaps for a long time, especially in isolated geographic regions, it will continue to be standard procedure. But many facts suggest that in increasing measure past practices may tend to be superseded by at least some greater degree of differentiation in the contacts between the client and the rehabilitation staff. The partially distinct roles of the occupational specialist, the psychometrician, the clinical psychologist, and the case or field worker who serves as the training and follow-up supervisor, can and should be distinguished. The clinic type of organization, with its advantage of more refined diagnostic methods and staff conferences and therefore pooled judgments in the diagnosis of a single case, can be used wherever transportation of the client to the guidance center is feasible (5). This will usually not be difficult in the large centers of population, or when it is practicable to take advantage of the provisions of the new Federal Law authorizing payments for the transportation and maintenance of clients in order that they may receive necessary services, including training. Remote areas can perhaps be served by a mobile diagnostic clinic comprised of specialists who will move on when the preliminary study of a group of cases is completed, leaving a field worker in charge.

An additional and compelling reason for raising the issue of specialization of function among the rehabilitation staff lies in a new provision of the 1943 Federal law providing rehabilitation services for civilians. The possession of so-called "functional" dis-

abilities now qualifies a person for aid, if the other conditions such as re-employability, etc., are met. What this comes down to, stripped of technical distinctions, is that for the first time persons suffering from psychoneuroses and the social maladjustments which arise from *personality* disorders are eligible for vocational rehabilitation. It will be seen at once that the importance of the clinical psychologist (and of the psychiatrist, as well as the occupational therapist) on the rehabilitation staff has been increased many times over. Now the case picture as only the well-trained and psychiatrically-oriented clinical psychologist can grasp it will more often be the central factor in diagnosing a case than it has been with clients who were physically disabled. The *person*, in all his clinical complexity, will need really to be studied first and studied thoroughly. Only afterward will the prospects of initiating rehabilitation and the finding of suitable jobs come into relation with the diagnosis. More often than with a physically disabled case, the insights which spring out of the clinical psychologist's professional training and experience might be altogether lost on an admirably competent vocational specialist. The latter, incidentally, may well be a quite different sort of person temperamentally from the "intraceptive" clinician.

Clinical and vocational psychologists, and even psychologists as a total professional body many of whose members will be seeking civilian re-employment in the post-war years, should study the implications and opportunities in this fast developing situation.

Veterans' Rehabilitation and Vocational Training

Under a law passed by Congress on March 25, 1943, the Veterans' Administration is intrusted with the program for the rehabilitation and training of soldiers with service-incurred disabilities by virtue of which they have become unemployable (4). Vocational Advisement and Training are included up to a maximum length of four years of training, during which the disabled veteran receives a pension, adjusted to the number of dependents. It is unnecessary to make any long statement here describing the projected procedures for carrying out the provisions of this law. Detailed plans are still being worked out.

Actually the principles of case diagnosis and rehabilitation are the same wherever they are to be applied. Many additional opportunities for counseling and training will be open to ex-soldiers, some of which may be non-governmentally sponsored, as by the

Red Cross and the American Legion. The Vocational Advisement Division of the Veterans' Administration is at work now on its plans to provide its own diagnostic counseling facilities working with and through a staff of rehabilitation field workers. In at least one instance (Minnesota) the State Director has already set up a diagnostic and counseling clinic headed by a vocational and clinical psychologist with a wide background of previous experience in guidance and rehabilitation and with Ph.D. training in psychology.

The facilities of the Veterans' Administration will of course be supplemented by the use of existing non-governmental agencies of every kind and description which can furnish guidance, training, placement, and follow-up—much as the civilian rehabilitation program now does. Only so could there be any hope of supplying the requisite services. Meantime, it is to be hoped that steps may be taken to increase at the earliest possible date, through professional training, the available rehabilitation personnel.

Well-conceived and reasonably liberal plans are also under way to provide vocational guidance and education for veterans who have *not* incurred disability at the time of discharge from the Army. Up to the present time Congress has not been asked to consider the legislation necessary to put such a sweeping plan into effect. It appears to be not unlikely, however, that eligible veterans, after adequate individual diagnosis and recommendation, will be offered free tuition and maintenance while enrolled in an approved curriculum of general, vocational or professional education, ordinarily for a period not to exceed one year. No soldier may receive training for any occupation unless it is believed that the existing supply of trained personnel in that occupation, or profession, is likely to be insufficient to meet the expected demand. An extension of this educational plan permitting longer training periods in selected fields, either for picked students whose professional education was interrupted by entrance into service, or for other veterans with special abilities, is also under consideration, with favorable action by Congress extremely probable.

The response from the psychological profession to the immediate and prospective opportunities in the fields of occupational and vocational rehabilitation should be enterprising and prompt. First attention might well be given to an overhauling and expansion of the existing training opportunities in the fields of vocational psychology and clinical psychology. In the past there has been in-

sufficient stress in these areas, and throughout applied psychology, on in-service apprenticeships. The use of these, perhaps under the designation internships, might well become almost universal for graduate students, on both the M.A. and Ph.D. degree levels, who entertain doubt (or should be doubting!) that their professional lives will lie exclusively in the classroom or research laboratory. Curricula so theoretical that they seem to be planned almost solely to produce research specialists have their place, but not to the exclusion of curricula designed to turn out psychological "practitioners" and technologists.

It requires no gift of prophecy to foresee the demand for all sorts of psychotechnology in the post-war world. Now is a fitting time to get rid of a "cultural lag" in the educational processes by which we make psychologists. Let us be sure that we are realistically prepared for our bright future. The love of scientific discovery will still continue to be our strongest historical tradition, as it should be in every science, and especially in a young science. We need not fear that pure research will be neglected or that we shall fail to press on—on all fronts—to the devising of ever more refined methods of analysis and measurement.

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THE CENTRAL EXAMINING BOARD FOR THE TRAINING OF NAVAL AIR CADETS*

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The Central Examining Board† was established in 1942, in the Ground Training Section of the Training Division, Bureau of Aeronautics, (now attached to the Office of the Chief of Naval Operations), U. S. Navy. The Board, composed of a staff of officers experienced in large-scale educational measurement, is responsible for evaluating the achievement and advancement of all Naval Aviation Cadets in various ground school courses. All examinations are prepared by, or under the supervision of, the Board, which also controls the methods of test administration and scoring, and determines the basis for ranking cadets. The results of testing are reported promptly to those responsible for the quality of the instructional program. By reporting the test findings in such a way that each school is aware of how it compares with all other schools teaching the same curriculum, a spirit of friendly competition is fostered. This competitive spirit has been a powerful incentive, motivating school staffs toward improvement which is quite apparent through higher standing on subsequent tests. In addition, the examining program assures that what the Navy desires taught is taught.

The Board members work in close cooperation with technical experts in the field of aeronautics who analyze the skills and understandings needed to perform adequately the duties of Naval combat pilots, and who participate in the construction of test items. The two groups continuously review each item in the light of statistical data and validity for the curriculum. Such a harmonious working arrangement between those thoroughly acquainted with aviation on the one hand, and those skilled in testing techniques on the other, gives every indication of being the ideal

* The opinions or assertions contained herein are the private ones of the writers and are not to be construed as official or reflecting the views of the Navy Department or the naval service at large.

† The members of the Central Examining Board are: Walter F. Robinson, Lieut., USNR, Officer in Charge; Walter J. McNamara, Lieut., USNR; Ralph C. Bedell, Lieut., USNR; Allen O. Gamble, Lieut., USNR; Ellis Weitzman, Lieut. (jg), USNR.

situation for examining aviation cadets and has implications for other practical testing programs.

The achievement of cadets, once clearly determined, forms a basis for modification of administrative procedures, improvements in instruction, changes in textbooks, remodeling of training equipment, and in general, the facilitation of cadet learning.

All tests are of the objective type with constant emphasis upon the accurate measurement of the cadet's understanding and application of essential principles, ideas, and skills. Mere factual recall, though essential for certain parts of training, is never sufficient. Tests must be guided by the objectives of training which are realistically based on the functions of competent officer-pilots. The same tests are given in all schools under uniform conditions. Such a program makes it possible to interpret learning progress against a background of national norms and an array of data which would have been astounding in pre-Pearl Harbor times. In addition, the instructional staff is relieved of a time-consuming and distractive burden, thus permitting them to concentrate their efforts on teaching.

Once the examinations have been prepared, they are administered by the instructors under the supervision of the officer in charge. Answer sheets are sent immediately to the Central Examining Board for scoring and analyses.

Results of tests must be translated into improved cadet learning in the shortest possible time to insure that no cadet enters more advanced stages of training lacking any of the necessary understandings and skills. No longer can a training program be content merely to apply data from one class of cadets to the instruction of the next. A cadet's ignorance may cost him his life, and us our battles. The rapid handling of millions of test papers annually is made possible by the use of a battery of electric test-scoring machines equipped with graphic item counters, capable of handling several thousand test papers per hour. (The large number of tests is due to testing each week's progress in each of several subjects throughout the extensive training period.) National norms are used in assessing learning progress. Schools and instructors receive not only test scores, but are also notified of specific instructional weaknesses revealed through analyses of test results. The instructors, on the other hand, are encouraged to aid the Central Examining Board by submitting suggestions for improving the tests.

In keeping account of the contributions of psychology to the war program, it is well to include the work of those engaged in achievement testing. New examining techniques and improved uses of test results are developing from the exigencies of war. Progress in the large-scale assessment of learning-achievement in flight personnel and the use of tests for the improvement of instruction and the facilitation of learning are marked contributions. The urgent needs of the time call for speedy, accurate, and above all practical, measurement of progress. Any weakness in such a training program would lead to a fatal weakness in pilot training.

THE RELATION OF PERSONAL DATA TO ACHIEVEMENT IN A RADIO TRAINING SCHOOL

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The curriculum, the measures of achievement, the predictive devices and the validity of these devices in predicting achievement at the Utah State Agricultural College Naval Radio Training School have been previously discussed (1). The purpose of the present study is to investigate the relationship between achievement and other individual differences not directly measureable by tests. The tests used were exclusively for experimental purposes and do not represent standard Navy practices.

The data to be discussed are derived from the personal data sheets of 275 sailors and 345 marines who entered the school in six companies from 95 to 116 men at monthly intervals from March 22, 1942 to August 22, 1942. Following are the percentages of the men possessing previous radio experience, college training and those over 25 years of age:

	Previous Radio Experience	College Training	Age over 25 years
Sailors	64%	41%	47%
Marines	7%	84%	28%

It will be noted that the majority of the sailors have had previous radio experience and the marines possess, in general, much more college training. These differences as well as the age difference are apparently a function of the selection policies of the respective organizations.

Table I presents the results from comparisons made in terms of the above factors. Considering first the comparisons between the marines and the sailors, we see that the sailors excel the ma-

* The author wishes to acknowledge the constructive criticism and assistance of Professor Arden N. Frandsen who is actually a collaborator in this research and also to express appreciation to Lt. Commander S. R. Stock and Chief Instructor Edward W. Payne for the privilege of being allowed to collect this data.

† The opinions and assertions contained in this article are those of the author and are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.

rines in achievement and in technical knowledge of electricity. The higher achievement of the sailors is supported by the fact that the percentage of marines transferred from the school as inept is approximately three times the percentage of sailors so transferred. Furthermore, the subjective reports of the instructors indicate that the sailors are more cooperative and are generally bet-

TABLE I

COMPARISONS OF GROUPS UPON THE BASIS OF TESTS AND ACHIEVEMENTS

	Mental Ability	Mathematics Ability	Information Test, Electricity	Technical Information in Mathematics	Technical Information in Electricity	Interest Questionnaire	Mathematics Achievement	Electricity Achievement	Laboratory Achievement	Average Achievement
Marines	57.7	36.0	82.2	43.5	75.0	193.8	61.4	61.4	67.8	62.5
Sailors	52.9	35.5	98.6	44.5	93.7	202.6	62.1	64.3	72.4	66.9
Difference	4.8	.5	16.4	1.0	18.7	8.8	.7	2.9	4.6	4.4
D./S.E. Diff.	8.3	.4	12.0	.6	5.8	2.5	.5	2.2	4.6	3.9
No Experience	57.6	36.4	87.8	44.4	76.9	195.8	61.8	62.4	68.8	64.3
Experience	52.2	34.9	95.0	41.5	99.1	207.2	60.2	63.2	71.5	65.4
Difference	5.4	1.5	7.2	2.9	22.2	11.4	1.6	.8	2.7	1.1
D./S.E. Diff.	5.1	1.4	4.5	1.3	7.5	3.1	.9	.6	2.4	.9
Age under 25	57.2	37.2	92.3	43.1	78.9	197.6	62.5	61.8	69.1	64.4
Age over 25	54.5	33.7	92.3	45.0	85.4	198.3	60.6	63.4	71.3	65.6
Difference	2.7	3.5	.0	1.9	6.5	.7	1.9	1.6	2.2	1.2
D./S.E. Diff.	3.1	3.1	.0	.9	2.2	.2	1.1	1.2	1.9	1.0
No College Training	52.0	33.8	91.8	43.3	95.3	204.5	48.5	58.1	68.6	61.8
Some College Training	58.1	38.4	86.8	43.5	79.5	195.7	63.4	64.0	70.8	66.1
Difference	6.1	4.6	5.0	.2	15.8	8.8	14.9	5.9	2.2	4.3
D./S.E. Diff.	6.5	2.8	3.3	.1	4.4	2.4	8.9	4.2	1.9	3.3

ter students. In order to ascertain whether this difference in achievement is due to the superiority of the sailors in technical knowledge of electricity or was a function of a lesser degree of motivation on the part of the marines, a group of 112 marines were matched with an equal group of sailors with identical scores on the tests of electrical knowledge. The average achievements of this selected group of marines is 63.80 as compared with an average of 64.35 of the equivalent group of sailors. The difference of .55 is

in favor of the sailors but in no way approaches statistical significance. It would appear, therefore, that if the marines were carefully selected as regards their knowledge of electricity, their achievement would compare favorably with that of the sailors.

Since the sailors in this study have enlisted specifically for the study of radio and do have higher average ratings and pay allowances than the marines, their superiority may be due in part to a higher degree of motivation and application. However, this is not a general factor and does not seriously affect the relative achievement of marines who possess a comparable amount of electrical and radio knowledge. However, certain instances of failure to succeed may be eliminated by the selection of only those who are definitely interested in this type of specialized training.

A second comparison was made between those who reported some previous radio experience and those who reported no such experience. The differences in achievement in favor of the experienced group in all cases except mathematical achievement are small and only in the instance of laboratory achievement, do they approach statistical significance. When a group of experienced men is matched with a group of inexperienced men upon the basis of pre-test scores on the tests of electrical information, the difference in average achievement is actually very slightly in favor of the inexperienced group but is not significant. The important factor again seems to be the knowledge of electricity and not the mere possession of experience. Experience, of course, is helpful, especially in laboratory work, if accompanied by knowledge but by no means essential.

When the men over 26 years of age are compared with those under 25 years of age the differences are insignificant although with the exception of achievement in mathematics the achievement scores are in favor of the older group.

In these first three comparisons, it may be noted that in each case the group with lower average scores on the intelligence test is the group with the high average achievement. This fact supports the findings previously reported by Frandsen and Hadley (1), as respects the relative importance of intelligence test results as compared with the predictive significance of mathematical and electrical knowledge.

When the group possessing some college training is compared with the group with no college training we see that the college group excels. This difference in average achievement is maintained

when the groups are matched upon the basis of electrical knowledge. The difference in this case is 8.12 giving a critical ratio of 3.92. When the groups are matched upon the basis of mathematics pre-test scores, the college group still excels in average achievement but the difference of 1.89 is not statistically significant. This suggests that college training is advantageous although it is possible for a student to succeed very satisfactorily without such training.

From these results and those previously reported by Frandsen and Hadley (1), it is evident that there would be fewer instances of failure if selection for this type of training was made upon the basis of tests of mathematical and electrical knowledge. Other factors would seem to be of secondary importance although experience, college training, and especially the desire to study radio are definitely advantageous.

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BOOK REVIEWS

BOCHNER, RUTH & HALPERN, FLORENCE. Clinical application of the Rorschach test. New York: Grune & Stratton, 1942. Pp. 216.

In conversation with a psychologist during a recent convention, this reviewer mentioned that a small group of us were meeting regularly to discuss principles and methods in Rorschach. The psychologist promptly asked, "And do you sing hymns, too?" This question reflects the general attitude of many psychologists toward the Rorschach test and its proponents. Bochner and Halpern will at least convince psychologists that the test is not a cult or a religion, but this book will not serve to overcome the general objection to the test on the grounds of undemonstrated validity. For example, such statements as "de are evidence of constriction. This is logical in view of their location on the blot. The individual who clings to the periphery is one who fears to attack the heart of a problem. This is a neurotic manifestation and is associated with evasion, anxiety and compulsion." (28) These should not be taken as a reflection upon the authors, however, since they were principally concerned with presenting in a simple, condensed form the principles of administration, scoring and interpretation of the Rorschach. It is unfortunate that the authors did not include a chapter on validity. Sufficient material is now available to convince most of us that the test is fundamentally sound, even though subject to misuse by over-enthusiastic proponents.

For the beginner, the book offers a lucid and concise description of Rorschach testing. It is not sufficiently complete, however, to permit the beginner to score and interpret the test without consulting other references. There is no clear method of differentiating between major and minor details. The scoring of good and poor form quality is also left to the imagination. As an independent presentation, therefore, this book does not compare with Beck's "Introduction to the Rorschach Method," or "The Rorschach Technique" by Klopfer & Kelley.

The advanced student of Rorschach will find much of interest in this book. The chapters dealing with interpretation of the symbols are well written and bring together under one heading the opinions of various Rorschach workers. Many of these interpretations are not from Rorschach and care must be exercised in the differentiation of well established Rorschach principles from the more recent and less well founded interpretations. The illustrative records are interesting and expertly interpreted. There are not sufficient records presented, however, to serve as a satisfactory background for "getting the feel" of records in various clinical categories.

This book is recommended as supplementary reading for beginners. For the more experienced Rorschach worker, it offers a number of interesting records and interpretations.

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RAPAPORT, D. Emotions and Memory. Baltimore: Williams and Wilkins, 1942. Pp. 282.

The special merit of this book is the integration of psycho-analytic findings (both clinical and experimental) with research in general psychology. While recognizing the contribution of psycho-analysis to psychological theory, most academic psychologists have felt the need for a careful evaluation and interpretation of psycho-analytic tenets before experiments based upon them could become common scientific property. Rapaport supplies this deficiency in a field which all too long has neglected clinical evidence in favor of laboratory experiments.

Rapaport starts out with a definite point of view. To him, memory, as every other human function, is motivated, charged with "energy," colored by emotion. Thus memory is conceived as a motivated behavior phenomenon and emotions as motivating factors.

In an attempt to clarify the concept of "emotion," Rapaport surveys various theories and definitions and concludes that "emotion felt" as an object of investigation has been neglected for research in concomitant physiological processes. As memory phenomena cannot be equated with equally clear cut physiological events, it is "emotion felt" which will have to be conceptualized before the relation of emotion and memory can be clarified. Rapaport's own preference is for a conflict theory of emotion which, like the psycho-analytic theory, would assume an unconscious process between the perception of the stimulus evoking emotion on the one hand, and the experience of emotion as well as the peripheral physiological symptoms on the other.

Chapters II to VII constitute a survey of the field of memory investigation. From his scrutiny of experimental and theoretical contributions of general psychology the author concludes that the so-called "emotional factor" influencing recall represents in fact a multiplicity of factors which, he suggests, may form a hierarchy of emotions. The core of this hierarchy would be the energy derived from conflicting instinctual drives which would be organized in various levels of emotional expression. They would appear on one level, e.g., as "attitudes," "sentiments," "complexes," or "determining tendencies," "needs," "tension systems" (according to the prevailing terminology) and so determine the reactions of the personality as a whole. On the next level, they would be organized as "feelings," "affects," shading gradually into more goal-determined factors such as "interests." Finally, the last derivative of the instinctual drive would be "likes" and "dislikes," and on a still more impersonal level "pleasantness" and "unpleasantness." This hierarchy of emotional expression would influence memory both quantitatively and qualitatively, determining not only how much is recalled but also the whole pattern of what is experienced and what is remembered. He suggests that memory has emerged from a primitive instinctual response with maximal emotional content to more intellectualized forms with minimal emotional content.

Considerable space is given in Chap. V to the contributions of psychoanalysis—theoretical, clinical and experimental. The repression mechanisms (displacement, symbolization, etc.) are considered as specific memory functions by means of which the instinctual drive is expressed on

various levels. One is inclined to deplore at this point the author's too-firm allegiance to the psycho-analytic conflict theory of emotion. As a result, his own formulation typically centers on conflict-derived affects and carefully evades emotions like joy or affection. This is the more surprising as he explicitly provides for "interests" and "likes" as well as "dislikes" on the more intellectualized levels of his emotional hierarchy.

Memory phenomena in hypnosis and memory pathology (amnesia, multiple personality, Korsakow syndrome) are adequately covered in the next two chapters. The author sees a continuous transition from repression to hypnotic and somnambulistic states and finally multiple personality; just as in repression a memory connected with an unacceptable striving cannot emerge, so whole sets of strivings may become unacceptable and whole periods become unavailable. Even the Korsakow syndrome implies important emotional components which determine the appearance of memory losses.

Finally, Rapaport quotes some direct experimental evidence (Chap. VIII) of the influence of emotion on memory—direct in the sense that perception itself and thus the "registration" of a memory is shown to depend on emotional factors. The types of experiments reviewed range all the way from the reproduction of learned material to projection experiments, in all of which Rapaport sees the affective factor as the common denominator influencing both memory and thought production.

In a concluding chapter, the author summarizes the conclusions he has drawn from the evidence presented. Affective drives are active in organizing thought and memory processes on different levels of expression, either transiently (evident in falsification of individual memories, slips of the tongue etc.) or more or less permanently (illustrated by interest-directed normal thought processes down to the extremes of wish-directed pathological thinking).

As Rapaport's conclusions imply, this book is not so much a survey of experimentation in two related fields as an attempt to arrive at a new systematization which would integrate the knowledge gained from experimental and clinical evidence. The material is well selected and always relevant but should be considered as documentation for the author's point of view rather than an exhaustive impartial review. As a new systematization, Rapaport's point of view is both stimulating and challenging and should pave the way for much further experimentation.

For classroom use, the summary and bibliography at the end of each chapter should prove particularly helpful.

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LANGER, WALTER C. Psychology and human living. New York: Appleton-Century, 1943. Pp. vii + 286.

"This will not be an easy book to read," says Dr. Keliher in her preface, and the reviewer can attest to the truth of her statement. Why such is the case is probably due primarily to the inherent difficulty of the subject matter. Dr. Langer is not content to give a superficial account of human behavior and the ways in which personality develops. He tries to

present the underlying dynamics, and this, in the present stage of psychological knowledge, is no easy task. In addition the book is rendered more difficult by the condensed manner of presentation; more space could well have been devoted to further elucidation of the points made along with more and less obviously "manufactured" illustrations. Perhaps a judicious use of charts would also have helped, although the author is to be commended for not using the type of over-simplified and misleading charts so frequently found in books of this character.

This book is one of a series presented by the Commission on Human Relations of the Progressive Education Association. It is designed according to the publishers "to serve as a textbook for courses in introductory psychology, personality and personal problems, mental hygiene, and the like." It differs greatly from the usual textbook, however, in many ways. No sources for additional reading are given; only occasionally is evidence presented to back up statements made; and although in the first part of the book the author is careful to warn the reader as to his assumptions and hypotheses, later he presents a great deal of theory as if it were established fact. Little use is made of psychological literature. Although Hobbes, McDougall, Sanford, Trotter, and J. B. Watson are mentioned, there are no specific references to any other psychologists save two. These two are H. A. Murray, upon whom Langer states that he has relied most heavily, and Freud.

Langer begins by a somewhat over-simplified presentation of the ideas of primitive man, and then proceeds to show, in a very able way, why "will-power," heredity, and "human nature" are unacceptable as explanatory concepts for human behavior. He devotes nearly one third of the book to a well organized and systematic discussion of physical, social and egoistical needs, their forms of expression and their destiny. The value of this section would have been greatly enhanced if the author had indicated which needs he considered basic and which derivative along with pertinent evidence. Although Langer does not suggest that the social and egoistic needs are innate, yet his manner of exposition may induce many readers to believe that e.g. Silas Marner became a miser *because* he had a strong *need for retention*.

The two chapters, The Integration of the Personality and The Return of the Repressed, are probably the most unsatisfactory in the book. Both are especially difficult to follow and both contain material that may arouse skepticism. For example, " . . . the aggression the child originally felt against his father has become redirected and turned inward against his own ego. This redirected aggression is experienced by the individual as conscience." (144) Again, "Like the dream, the neurotic symptom represents the return of repressed wishes in disguised form." (228) Both of these statements *may* be true, but one is not convinced of it from reading this book.

Although Langer refers in many places to the culture not only as providing the framework for behavior but also as an active force affecting behavior, he does not seem to realize that some of the conflicts from which individuals suffer may be imbedded in the culture itself. He thus even appears to ignore the contributions to this subject made by those whose

psychological views are similar to his own, e.g. Karen Horney and Eric Fromm.

Despite the aforementioned deficiencies, the book on the whole is a good one. The chapter on escape mechanisms is masterly and the section on improving one's own adjustment is ingenious. Langer avoids the all-too-common "lift yourself by your bootstraps" approach and makes what appear to be sound suggestions for aiding one's adjustment even when the factors at the root of the trouble are unconscious.

ROBERT C. CHALLMAN
Psychological Laboratories, Norwich State Hospital, Norwich, Conn.

FRY, CLEMENTS C., with the collaboration of Rostow, Edna G. Mental Health in College. New York: The Commonwealth Fund, 1942. Pp. xix+365.

At the present time, there are mental hygiene services in many college communities, but all too often a university psychiatrist is "widely considered a luxury, and in many places a luxury not much sought after." Fry and Rostow contend that too few colleges are willing to assume responsibility for the emotional development of their students by providing psychiatric aid and counsel. Yale University is one of the few. As early as 1925, a mental hygiene service for students was organized there. As may be expected, the program had many changes of heart, of personnel, and of techniques and methods. However, the service hurdled these barriers and exists today as an indication of a need for such an organization. The authors believe that their study "suggests that no college can escape this burden if it wishes to fulfill its educational goal."

Even though the book is described as a "study of case histories," it is unusual to find such a scarcity of statistical material. In the entire book there is only one table and it does not refer to the study. As a result, it is extremely difficult to discover how many and what types of students were treated for mental hygiene problems. Pertinent tables, even though in an appendix, would add much to the book's value. Furthermore, there is neither a bibliography nor any direct reference to other studies or authorities.

As a study of case histories, the book serves its purpose well in clearly showing the university's responsibility toward the emotional development of its students. More than 125 cases are discussed. Each is objectively, yet interestingly written. The book can well be used as a reference by those institutions planning on a mental hygiene service for students.

The book is organized into four parts. Part One, the Introduction, discusses the problem and materials of the study. Family relationships and sexual growth, behavior, and attitudes are treated under Problems of Personality Growth in Part Two. Social adjustment and scholastic adjustment are discussed in Part Three under the title, Reactions to the Undergraduate Environment. Part Four considers special problems found mainly in graduate and professional schools.

Of the 1,257 students who consulted the service, 787 were undergraduates and of these approximately 45% were freshmen. Of all the students interviewed only about 8% were considered to be really "ab-

normal." One may wonder why a psychiatric service is necessary, when such a small number of cases are classed as abnormal. Dr. Fry states that if psychotic, psychoneurotic, or psychopathic personalities were the only ones ever seen, the division would become little more than a "clearing center where patients are diagnosed and sent elsewhere for treatment. Frank mental disorders cannot be treated in a college; such cases must be hospitalized." One of the best arguments for convincing "die-hards" who are unwilling to see the value of a mental hygiene service lies in the needs of students who do not have "mental disorders." As Dr. Fry indicates, practically all the patients treated were so-called "normal" boys who act at times like "abnormal" boys.

In the inauguration of the mental hygiene service at Yale, the authorities were interested in discovering how best to reach all the students who might need treatment. The various metamorphoses of the program may interest college administrators who now see the need for some type of post-war mental hygiene clinic in their institution. (1) At first, a series of freshman conferences were given by the mental hygiene staff with the hope that students so exposed would come for help when needed. However, the results were not sufficient to continue this method beyond two years. (2) The next method was to give a routine mental hygiene examination as part of the physical health examination to all entering students. This method was discontinued after four years, partly because of failure of the system itself and partly because of staff reductions. Dr. Fry and his colleagues came to the conclusion that students who wanted psychiatric aid would seek it, and those who didn't want it, could not be forced. (3) The program now in force ever since 1932, is seemingly a much more natural and efficient one in that the referrals come from physicians in the Department of University Health, and from deans, counselors, faculty, parents, students, and friends.

Generally speaking, this is a valuable reference work for every person concerned with student personnel. It is necessary to bear in mind, however, that this study is strictly a Yale product, and that what applies for Yale need not apply for any other institution contemplating the organization of a mental hygiene service.

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SHAW, CLIFFORD R. & MCKAY, HENRY D. Juvenile delinquency and urban areas. Chicago: University of Chicago Press, 1942. Pp. xxxii +451.

The association of juvenile delinquency with city life, and the existence of delinquency areas in cities, have long been recognized and studied. The present volume, containing data from twenty-one cities, represents a major contribution to this phase of human ecology. The authors do not treat directly with psychological phenomena; nevertheless, the studies hold considerable interest for social psychologists.

The most detailed analysis is made of the city of Chicago—two-fifths of the text being given to a complete study of juvenile delinquency over a period of forty years. The geographical expansion of the city is described,

with particular attention given to the differentiation of areas within it: business, industrial, and residential. A variety of data descriptive of this process is presented, including different measures of variation in economic, social, and cultural characteristics. The relation of these data to delinquency figures and rates is demonstrated in many maps, tables, and graphs. The design of the remaining studies is similar, though each is much less extensive in score. There is a minimum of anecdotal and case material.

The authors recognize explicitly a number of the difficulties obstructing scientific analysis of social phenomena, present their data in considerable detail, and point out several qualifying or limiting circumstances. Much use is made of fitted curves, the product-moment correlation coefficient and the correlation ratio. Regression equations and other statistical statements of relationship are limited, however, to the particular sets of data studied.

The concluding chapter contains a brief but provocative statement of interpretation, which turns upon two related generalizations growing from the twenty-one studies in the volume. The authors take the position that "all community characteristics, including delinquency, are products of the operation of general processes more or less common to American cities." (435) They also assert that these processes are determined by a typical pattern of American city growth, which consists of a system of radial expansion, resulting in concentric zones wherein the population is assorted on an income basis. This sorting of the population is held to be an intrinsic feature of the pattern.

The authors make much of the economic factor, apparently because close correspondence between family income level and delinquency rate is a consistent finding of their studies, remaining unchanged when such factors as parental nativity or race are controlled. It is argued that since low income groups contain few of the voluntary institutions for maintaining conventional standards and norms of behavior, the norms and values of the child's social world in such areas are more heterogeneous and less likely to be consistently conventional. Delinquency is, therefore, much more likely to develop. In keeping with their interpretations, the authors discount individualized methods of treatment and emphasize the general community changes which will permit improvement in the economic and social conditions of families in high delinquency areas. They recommend the area project or neighborhood action plan, whereby residents of delinquency areas pool their resources in an effort to improve physical circumstances of the neighborhood, provide recreation for youth, facilitate the programs of schools, and generally increase the intelligent handling of children in the area.

The critical reader might regard the neighborhood action suggested by the authors to counteract delinquency as somewhat superficial, in view of the emphasis on delinquency as a "form of social tradition, inseparable from the life of the community," (436) and the limitations placed by that tradition on the foresight and concern of the participants. Other conclusions may likewise need qualification. The analysis of delinquency, while not violating the data, clearly reaches beyond the data and reflects a broad theory of motivation and learning and of culture transmission not

explicitly developed in the study. The study itself, however, merits the close attention of psychologists interested in the influence of broad social forces on the behavior of individuals.

DALE B. HARRIS

University of Minnesota.

VARNUM, WALTER C. Psychology in everyday life, 2nd Ed. New York: McGraw-Hill, 1942. Pp. xiv–490.

Several changes and additions have been made in the present edition of this elementary text designed for "nonprofessional students." Two new chapters have been added including an introductory chapter on psychology in "war and peace" and another on meeting personal problems. In other parts of the book fifty additional pages of new material have been added. The author has tried to make this edition timely by relating the material presented to present world events. In this he has done well. Other changes in the text include several excellent new illustrations, a number of new tables, a glossary of technical terms, several new "suggested readings," and the relegation of the chapter on physiological psychology to the appendix.

Although most of the topics are quite adequately presented, the volume does have many shortcomings. The author still favors the laws of *readiness*, *exercise* and *effect* even though the first two have been seriously questioned. He makes sweeping statements with conviction, such as, "Naturally, the more an act is used, the more firmly it becomes entrenched in the system" (214). When discussing methods of learning he extols the merits of the whole method over the part method but makes no mention of the progressive-part method. In his discussion of drives he fails to distinguish between the "resistance" and "obstruction" methods of measuring animal drives. He gives considerable space to the James-Lange theory of emotions, and omits entirely Cannon's thalamic theory. Whereas Watson's study of the emotional behavior of infants is mentioned several times, the more recent work of Pratt, Nelson and Sun is not even listed. In his discussion of the Binet test we read, "The most widely used American translation is the Stanford (University) Revision by Dr. Lewis M. Terman" (269). Either the author is unfamiliar with the more recent Terman-Merrill revision, or he considers it unimportant. Moreover, we are told that IQ "never changes," and that the "most important applications" of intelligence testing are vocational. A classic in mis-statement is: "Since feeblemindedness is inherited, little can be done for the unfortunate individuals in any case" (274).

One can not help being impressed with the fact that the author cites repeatedly experiments that were performed two decades and more ago, and that he eschews the more recent studies that in some cases have superseded those from which he quotes. Unfortunately this text is outstanding for its sins of commission as well as those of omission.

GEORGE J. DUDYCHA.

Ripon College.

NOTES AND NEWS

VIRGINIA VAN DYNE FLEMING of Washington, D. C., died May 5, 1943, of a pulmonary embolus following the birth of a daughter.

Notice of the death of BERTHA M. BOODY of Brookline, Massachusetts on August 21, 1943, has been received.

PI LAMBDA THETA, National Association of Women in Education, announces two awards of $400 each for research on the professional problems of women. Three copies of the final report of the completed research study should be submitted by August 1, 1944. Information concerning awards and the form in which the final report shall be prepared will be furnished upon inquiry to MAY SEAGOE, University of California, Los Angeles, California, who is Chairman of the Committee on Studies and Awards.

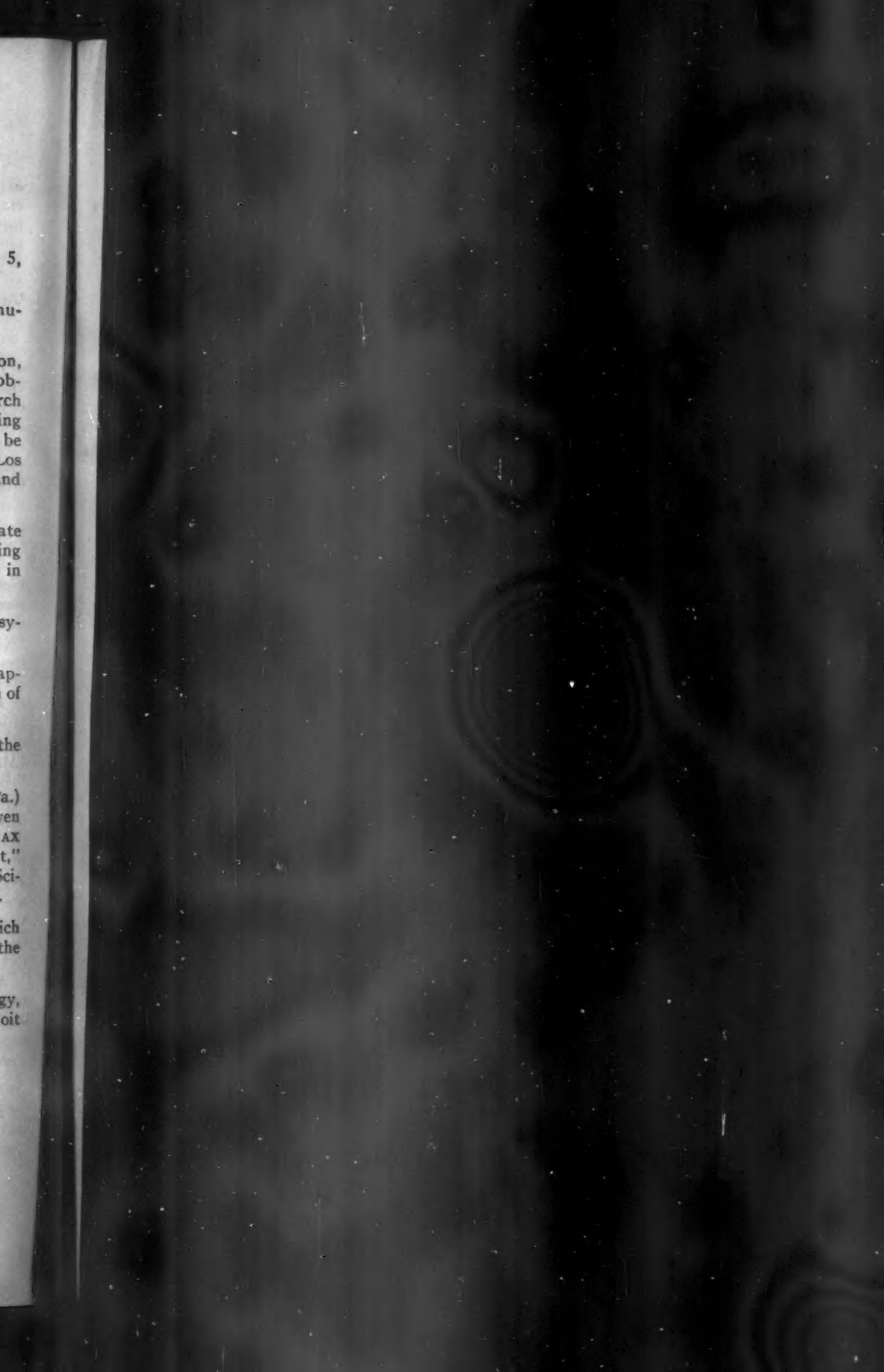
PAUL CAMPBELL YOUNG, professor of psychology, Louisiana State University, has been named acting head of the department to serve during the absence of WAYNE DENNIS, who is on duty as a lieutenant (j.g.) in the Navy.

CHARLES ALFRED METZNER, has been appointed instructor in psychology at the George Washington University.

The New York State Teachers College (Buffalo) announces the appointment of OSCAR E. HERTZBERG, professor of psychology, chairman of the department of education, succeeding CHARLES C. ROOT, retired.

G. H. GUNDLACH, has been appointed lecturer in psychology at the University of California (Berkeley).

WOLFGANG KOEHLER, professor of psychology at Swarthmore (Pa.) College, will conduct the graduate course in psychology formerly given at the New School for Social Research (New York City) by the late MAX WERTHEIMER. Professor KOEHLER spoke on "Value in a World of Fact," at a session of the Conference on Methods in Philosophy and the Sciences, held at the New School for Social Research, November 28, 1943.

KARL F. HEISER, director of the laboratory of psychology at Norwich State Hospital, Connecticut, has been appointed research director for the State Public Welfare Council.

JOHN M. MCGINNIS, former head of the department of psychology, Hollins College (Va.), has been appointed to a similar post at Beloit College, (Wis.)